



The Hunt for the Missing Billion: NZ's Dairy Beef Opportunity

Alan Cook, Kellogg Rural Leaders Programme 2014

An analysis and investigation in to the opportunity to develop a stronger Dairy Beef Industry from New Zealand's growing Dairy Industry

19 October 2014

TABLE OF CONTENTS

1. Executive Summary

- Purpose
- Method
- Findings
- Recommendations
- Conclusions

2. Introduction

- Key Trends
- By Products

3. SWOT

4. Value Chains

5. The New Zealand Beef Opportunity

6. The New Zealand Dairy Beef Opportunity

7. Sexed Semen

8. Conclusion & Recommendations

9. Acknowledgements

10. References

1. EXECUTIVE SUMMARY

Purpose

To analyse and investigate the opportunity to develop a stronger Dairy Beef Industry from New Zealand's growing Dairy Industry.

Method

1. To understand the existing Dairy Beef industry in New Zealand and identify the strengths, weaknesses, opportunities and threats within the existing framework
2. Identify and analyse the existing value chains
3. Identify opportunities to develop further value

Findings

New Zealand has an established and functional Dairy Beef industry. Existing value chains and enterprise options are available to farmers that can meet the needs and demands of different markets within the New Zealand pastoral farming sector.

A significant resource of animals is created by the New Zealand Dairy industry annually. Information available indicates 2.3 million calves are not making it beyond 4 days of age.

The prospects for the Global Beef industry suggest that there is an opportunity for New Zealand to grow more Beef to meet strongly growing global demand over the next 50 years.

New Zealand has an increasing share of its food exports being sold to China, and a Meat schedule market in New Zealand that has been stable for a number of years.

As the New Zealand Beef cow herd continues to shrink, growth in New Zealand's total Beef production can realistically only be expected to come from a larger Dairy Beef industry.

Significant prejudices and stigmas exist among New Zealand Beef rearers and finishers toward Beef Cattle with Dairy ancestry (especially Jersey) and large value discounts are applied because of this. Information available does not support these beliefs and, in instances, proves them incorrect.

The possibility of sexed semen provides opportunity to improve the productivity and rate of genetic progress in the New Zealand Dairy industry and also for the Dairy Beef industry to expand.

The prospect of rearing more Calves from the Dairy Industry, sired by Beef Bulls, feeding them for a shorter duration on high performance pastures and forages, provides a pathway to much more efficient and profitable Beef production in New Zealand.

It is imperative that Beef Bulls used by Dairy Farmers are appropriate and do not interrupt the primary purpose of the Dairy Cow: to produce Milk.

Recommendations

1. Further research in to the number of Calves being born on New Zealand Dairy farms annually, and the fate of those Calves, is recommended. This will allow an accurate picture of existing Farm practices and the inherent opportunities and risks that exist.
2. For New Zealand Meat Processing Companies to adjust payment schedules that reward Meat Quality and saleable meat yield, rather than the current fatness and muscularity measures which penalise Carcasses of Dairy ancestry and reward those of accepted Beef ancestry.
3. That information to hand regarding Meat Quality, and breed effects, be distributed among the Beef Industry in an effort to prevent or reduce the value discounts toward some breeds.
4. That the findings of the Beef and Lamb NZ, MPI Sustainable Farming Fund initiative to finish Beef Cattle by 20 months, be rolled out further and encouraged.
5. That Case Studies of Farming businesses successfully taking Crossbred Dairy Beef Cattle through to slaughter be identified and exhibited to demonstrate what can be accomplished.

Conclusions

New Zealand has a significant opportunity to become much more efficient in its Beef production and capture the opportunity of Global Beef demand growth. A very large resource of potential Beef Cattle is born and available annually from the New Zealand Dairy industry.

Only a small portion of that available resource is being reared annually and of those reared, many are being carried through to slaughter at 30 months or older, requiring a second Winter and the poor Feed Conversion Efficiency that goes with it. Better utilisation of the findings of the Beef and Lamb, MPI work in this area, would see improvements to Farm systems that create much better returns to Beef Finishers and allow greater throughput of Livestock.

The Dairy industry has vulnerability in how some farms deal with this particular by-product and there are risks inherent which need to be planned for. Having a Dairy Beef industry that is able to transform as much of that by-product as is practically possible, is an important component in managing the public relations risk.

A better understanding of the inherent Meat Quality and Meat yield characteristics of Dairy Beef cattle among Beef Rearers and Finishers and Stock Agents could be expected to see much better acceptance of those animals in Livestock Markets and stronger underlying value which would lift 4 Day old values.

2. INTRODUCTION

Key Trends

The New Zealand Beef Cow herd is shrinking in size and has been since it peaked at 2.4m Cows in 1975. While the graph below shows the reduction over the last 10 years, this is a longer term macro trend attributable to a number of factors including:

- Change of land use (forestry, urbanisation, conservation, dairy farming)
- Change of enterprise (higher sheep ratios, trading cattle, dairy grazing/support)
- Inferior direct & measurable profitability relative to other livestock enterprises

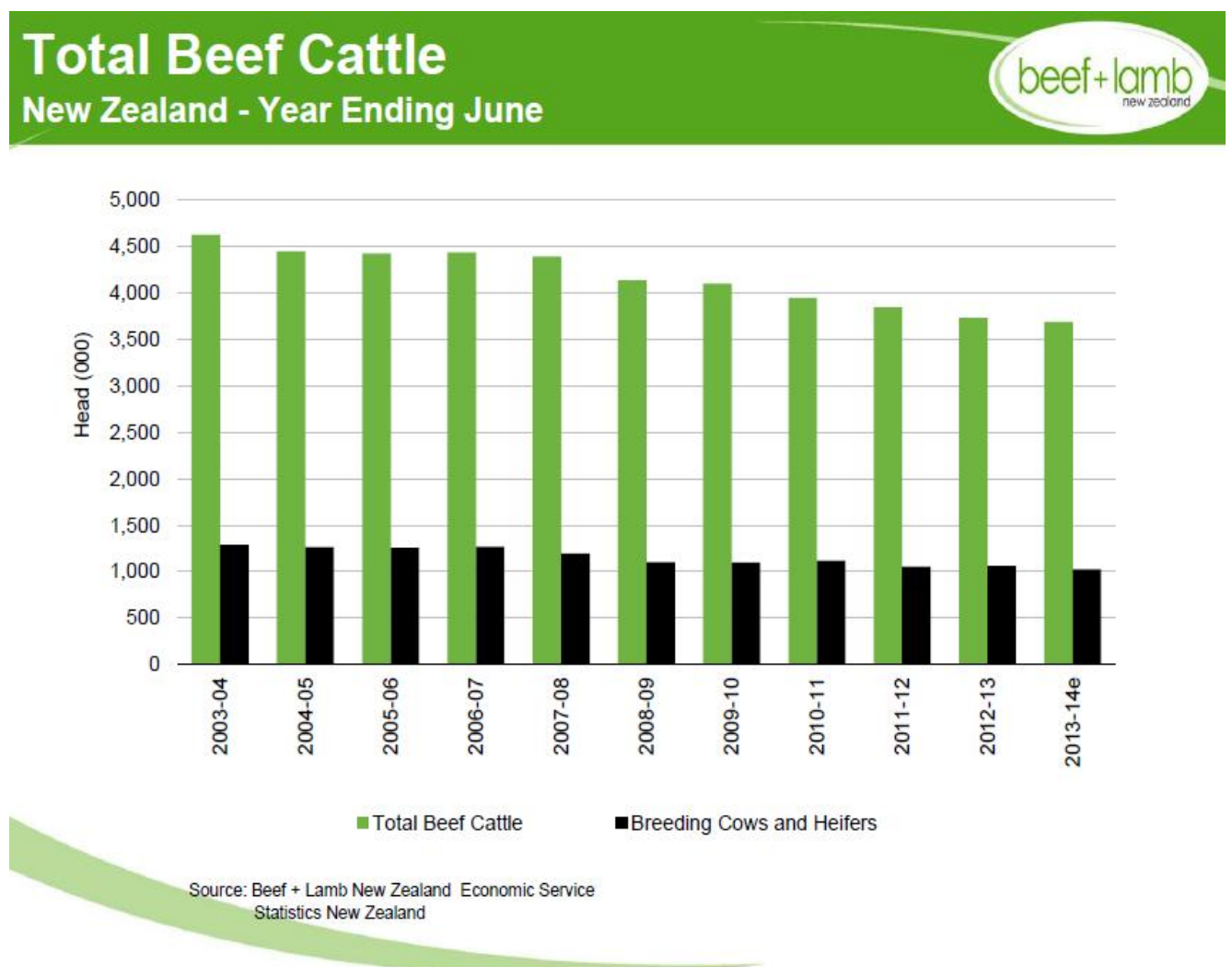
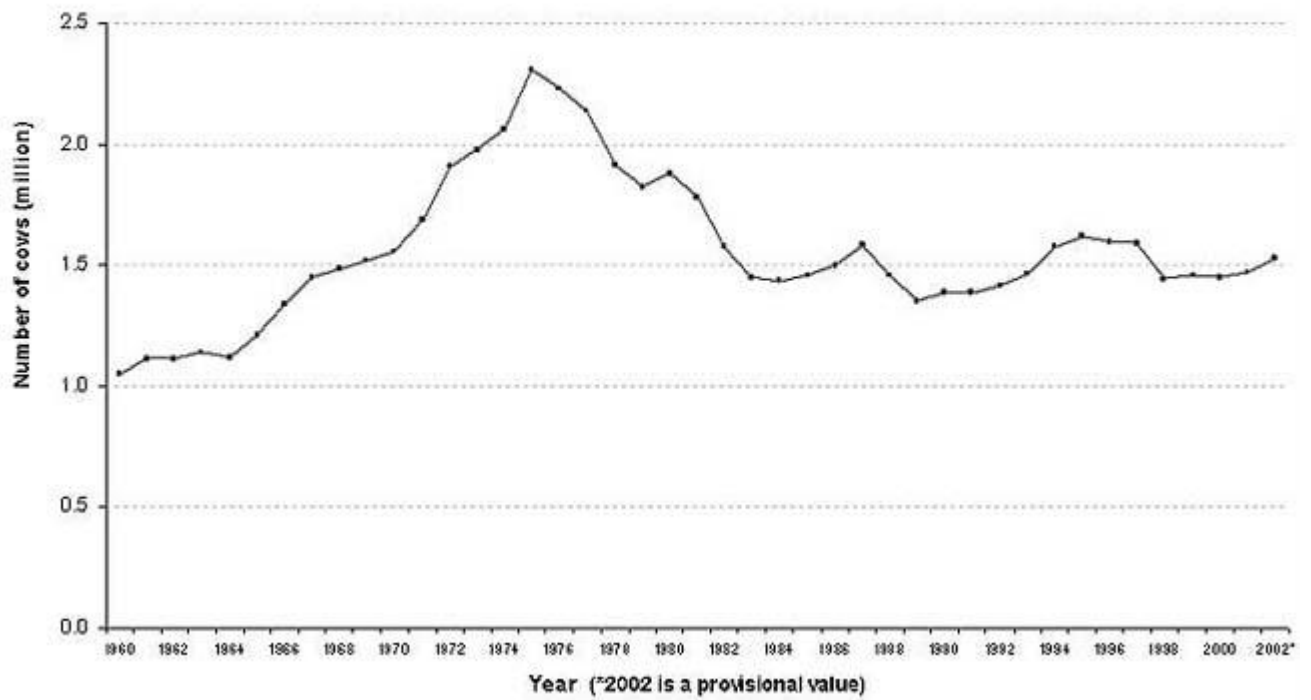


Figure 1 Long term trend in beef breeding cow numbers (millions) in New Zealand for the year ended 30 June

**Beef breeding cow numbers (millions)
in New Zealand as at 30 June for each year from 1960 to 2003.**



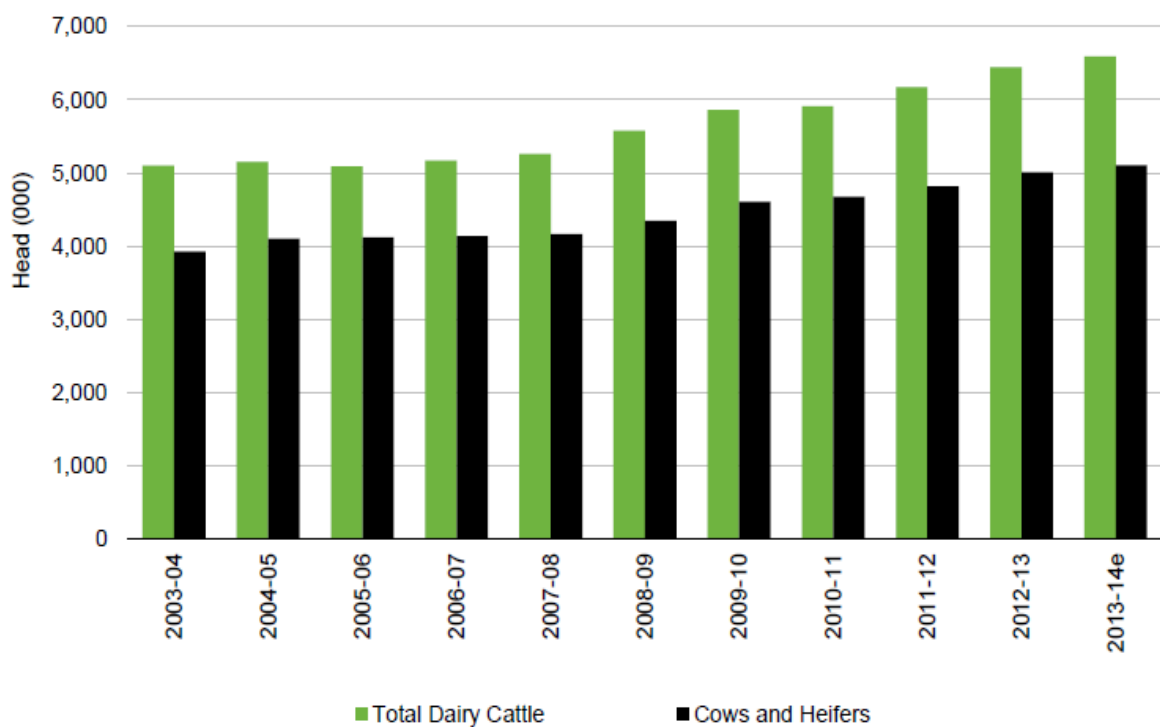
Source: [New Zealand Meat Statistics](#)

The Graph above demonstrates the longer term trend of how the New Zealand Beef Cow herd has reduced from 2.4 million Cows in 1975, through to 1.5 million in 2003 and then quickly down to 1 million in 2013.

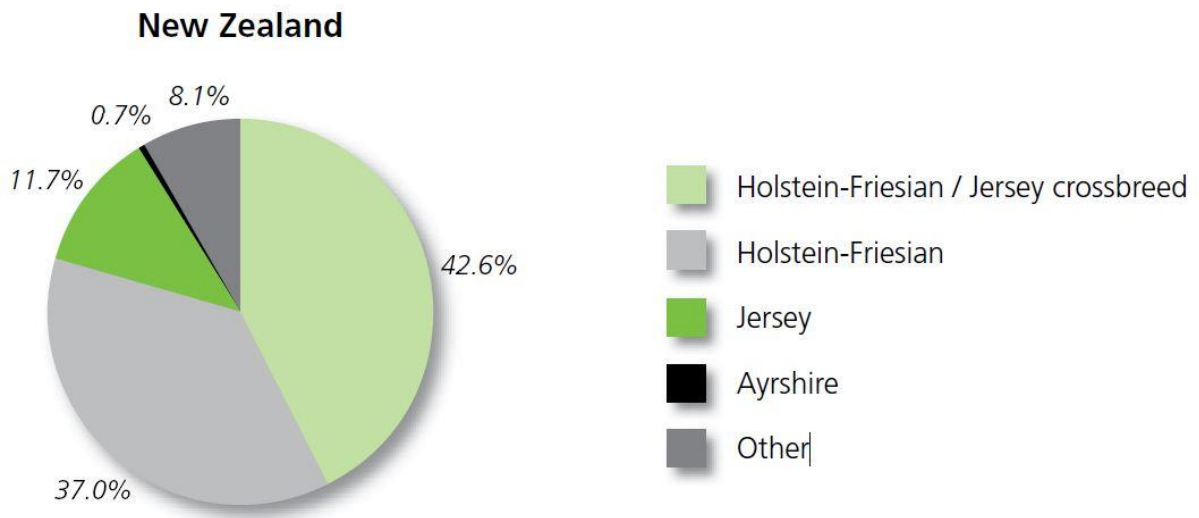
In contrast to the Beef Cow herd, the New Zealand Dairy Cow herd has been growing in size and changing in composition for the last 30 years. This is a long term trend attributable to a number of factors including:

- Change of land use to dairy farming as the most profitable pastoral land use option
- Change of herd composition due to productive advantages of hybrid vigour as captured in hybrid animals in Poultry, Pork, & Sheep industries

Total Dairy Cattle New Zealand - Year Ending June



Source: Beef + Lamb New Zealand Economic Service
Statistics New Zealand



Source: LIC DairyNZ New Zealand Dairy Statistics 2012-2013

The New Zealand Dairy herd is now broadly split 50:50 between pure bred and hybrid (Holstein-Friesian x Jersey) type animals which is a real change from 20 years earlier when Herds were predominantly made up of one breed. This has significant implications for the Dairy Beef industry which are described further on.

By-Products

Definition: By-product; a secondary or additional product produced in addition to the principal product

The primary Income source for a New Zealand Dairy Farm is from the production of kilograms of Milksolids:

- @ 93% of Total Farm Income (ranges from 91.2% - 94.6%)

Beef is a small income source for a Dairy Farmer derived from surplus Cows, Bulls & Calves

- @6% of Total Farm Income (ranges from 4.2%-9.0%)

Calves in the Dairy Industry are a means for naturally restarting the lactation cycle and to breed genetically superior Herd replacements.

- @1% of Total Farm Income – this ranges from 0.5% to 3%

The following table outlines usage of Calves born from New Zealand Beef & Dairy herds*:

	Beef		Dairy	
Male	440,000		2,073,000	
Female	440,000		2,096,000	
Replacements	170,000	19.3%	1,096,000	26.3%
Finished	660,000	75.0%	836,000	20.0%
Die on Farm	50,000	5.7%	500,000	12.0%
Bobby			1,696,000	40.7%
Export			44,000	10.6%

Source: Beef and Lamb NZ 2014

*This information in this table is not to be reproduced or distributed without the prior consent of the report author.

Discussion:

A very important point to note regarding the Calf numbers from the national Dairy herd is that there are 5 million Dairy Cows being milked nationwide which means there had to be 5 million births to start the lactation cycle, however the fate of only 4.18 million Calves is recorded. Therefore the whereabouts of some 0.8 million Calves can only be speculated. Some will not be recorded as those Cows may have aborted late in their pregnancy but been able to lactate and included in the herd. Some will have been induced late in pregnancy also.

A second possibility is Cows not becoming pregnant and having their lactation extend in to a second season which is easily achieved on a Dairy Farm using a split Calving system. This scenario can be expected to account for a portion of the number in question here.

A third possible conclusion to draw is that the number of Calves dying on farm (or being killed on farm at birth) is much higher than the official figures can record. Farmers are unlikely to openly disclose a farm operation policy of killing Calves at birth or the number of Calves dying on their farm because they do not want to draw attention, and understand that this action can be easily misunderstood by the general public and people with animal welfare concerns.

As a consequence, there will continue to be a 'grey area' with regard to these statistics as there is no official or legal requirement for farmers to disclose such numbers. Anecdotal evidence indicates that there are many large scale Dairy farms that have a policy on euthanizing Calves at birth as it represents the simplest and most cost effective method of dealing with this particular by-product. Anecdotes also indicate these are herds of mixed Breeds (Friesian x Jersey based hybrids) producing Calves achieving little monetary value in the 4 Day old Calf market.

Accordingly, the 800,000 'hole' in the numbers cannot be substantiated one way or other, but it can be assumed that the figure of 500,000 Calves dying on Dairy farms is quite likely to be many hundreds of thousands below the actual figure.

Further analysis and research in this area would be beneficial for the Dairy industry – by allowing a better understanding of on farm systems.

3. SWOT ANALYSIS OF THE NEW ZEALAND DAIRY BEEF INDUSTRY

Strengths

- Existing and well established value chains (see section 4)
- Ability to create significant value from a by-product animal
- Rearing and processing infrastructure in place
- Less market volatility than many other Livestock grazing options

Weaknesses

- Variation in profitability / margin at different points in the value chain.
- Significant market prejudices & stigmas towards Beef animals sourced from Dairy Genetics
- Beef Income represents a very small % of a Dairy Farms TFI (@6%)
- Limited scale to grow (restricted land area, competing land use options)

Opportunities

- Add much more revenue to an existing by-product or resource
- Scale higher volumes through existing channels
- Global forecasts and outlook for Beef consumption are promising
- Technology like Sexed Semen creating mating opportunities for Beef Genetics

Threats

- Other land use options
- Publicity / Reputational risks for Dairy industry around management/disposal of newborn Calves
- Dairy industry drive toward a more compact on farm Calving spread through the use of Short Gestation Dairy Genetics during the mating period where they have historically used Beef Genetics

4. EXISTING VALUE CHAINS FOR CALVES BORN FROM NEW ZEALAND DAIRY HERDS

Option 1: Raising Heifers for Domestic Herd replacement or Export



Features of this value chain:

- Established - but with varying volumes and demand from year to year
- Potentially very profitable – 4 Day old Calf value up to \$400
- Variability and volatility around specifications
- Value of animal within 20 months up to @\$1700

Option 2: Calves reared for Beef Finishing



Features of this value chain:

- Well established in New Zealand and accepted as a normal farming policy
- Transparent – can involve up to four Store market transactions
- 4 Day old Calf value ranges from \$100 to \$150 (Friesian Bulls) up to \$250 (Hereford, Simmental, Charolais x)
- Meat Processors actively participate in this value chain at times with contract options available
- Advocated as a Cattle trade by industry participants
- Value of animal within 24 months is @\$1300 (280kg CWT * \$4.50/kg)
- Many Dairy Farmers have this as an enterprise alongside their Dairy business and vertically integrate (spread of risk)
- Contracts are available through the likes of Firstlight Wagyu and Meat Company programmes.
- Includes flexibility to process at different ages (18 – 30 months) depending on farmer priority and farming policy.

Option 3: Raising Bull Calves for use as Service Bulls



Features of this value chain are:

- Limited scale: use for 1:25 born, Service Bulls can be used for multiple years
- A much more valuable option than the alternative (Bobby)
- Value of animal at 27 months up to \$1500
- Animal health requirements and costs
- Restricted almost exclusively to purebred Jersey or Friesian Bulls

Option 4: Immediate or 4 day old processing for Pet Food etc (Bobby Calves)



Features of this value chain are:

- Complimentary for Sheep Meat processors allowing year round capacity utilisation
- Simple disposal option for farmers – pick up on farm organised by Processor
- Lowest value outcome @\$25 at 4 days of age

Discussion:

Value Chain Options 1,2 and 3 achieve a significant return per animal over a relatively short lifetime <30 months. Those 3 enterprise options can be, and regularly are, integrated in to larger pastoral or mixed farming operations and often prove complimentary in terms of grazing management, operations, cashflow and risk appetite.

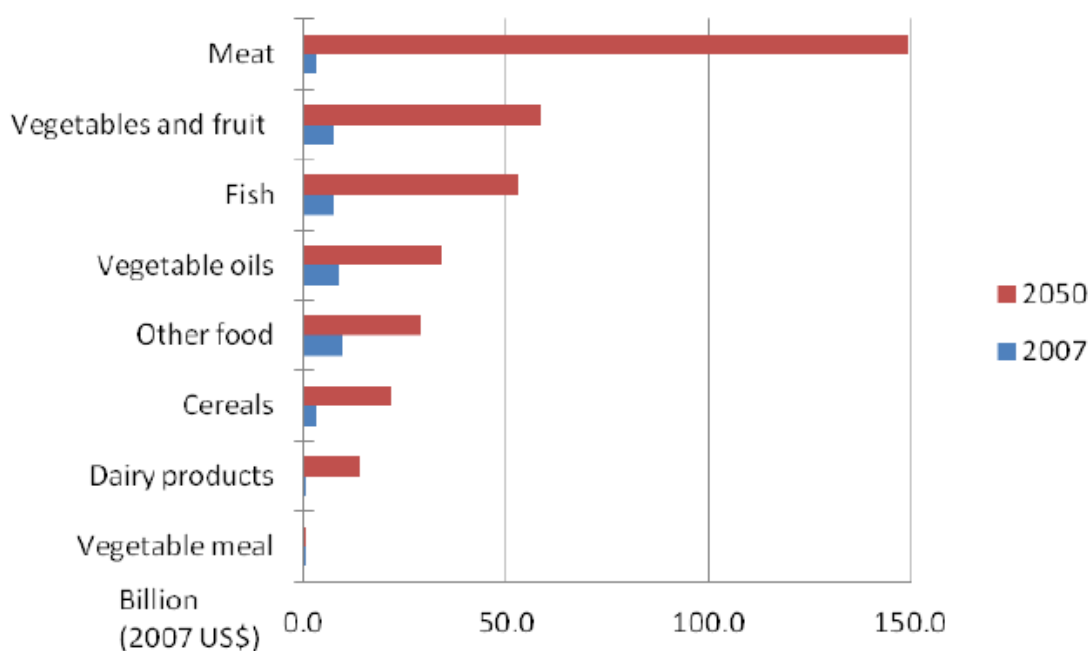
The following chart is an extended value chain for Option 2 and includes an estimation of the key priorities and risks for each party in the chain

Breeder	Priority Risks	Milk production
Rearer	Priority Risks	Gross margin High volume low margin Animal health, Market values
Grower	Priority Key Risk	Gross margin achieved by LWG & complimentarity Market values (trade margin risk)
Finisher	Priority Key risk	Gross margin, Feed conversion efficiency, specifications Market values
Processor	Priority	Capacity utilisation, consistency of supply
Retailer	Priority Key risk	Gross margin, Consistency of supply & product quality Food safety
Consumer	Priority	Eating quality Value for money, food safety, traceability, production integrity

5. THE NEW ZEALAND BEEF OPPORTUNITY

The prospects and forecasts for the NZ Beef industry are promising with increasing global demand predicted for Beef – especially for imports by China from global markets. While Beef supply growth is expected to come from many nations, their ability to match supply growth with demand growth is unlikely.

Figure 7 China's imports by commodity grouping



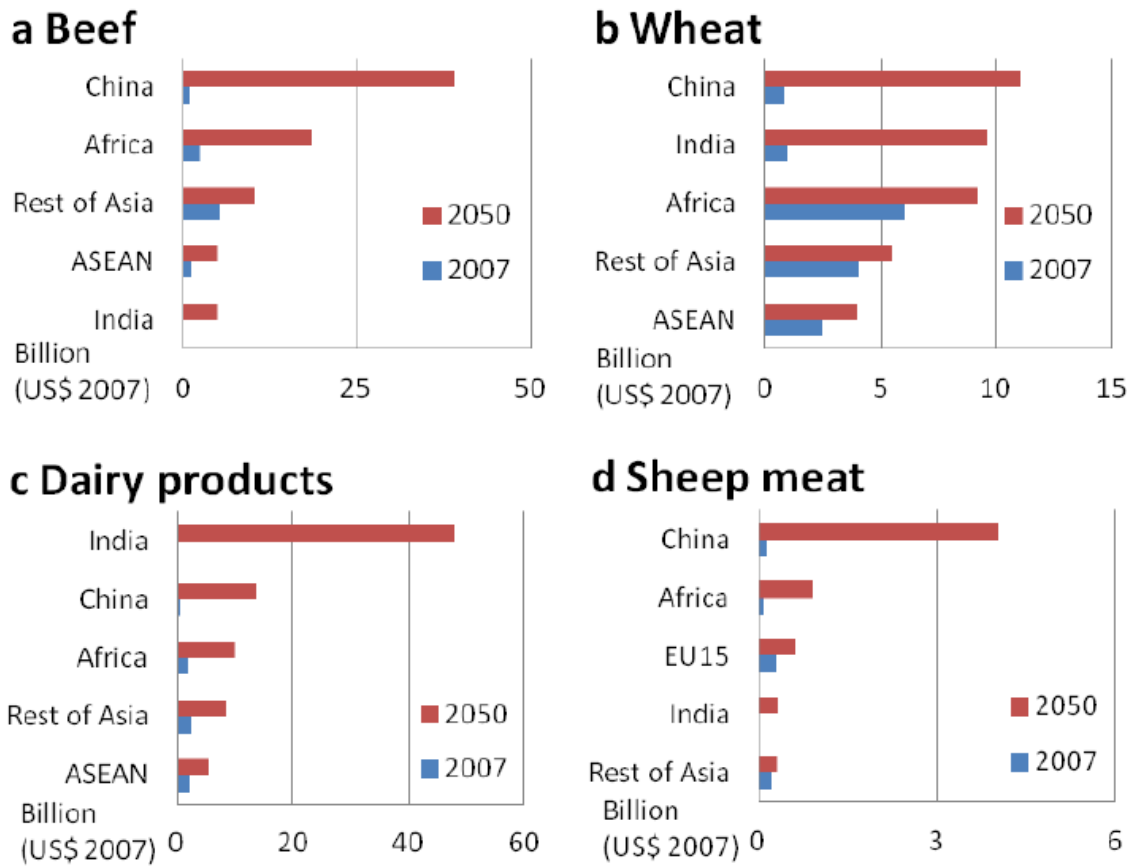
Data source: ABARES model output

Discussion:

The Graph above was presented to the Australian Government in 2012 and demonstrates the enormous increases forecast in China's imports of Food – especially for Meat. It is important to note that China's Agricultural policy is to focus on growing its domestic Rice, Grain, Pork and Poultry production which means that a large proportion of its Meats imports will be Sheep meat, Goat meat, and Beef. This information provides opportunity for Beef producers around the world when taking into consideration the following excerpt from the same report:

“World beef imports are projected to be about 300 per cent higher in 2050 than 2007, with China's increased import demand accounting for 66 per cent of this rise. Africa is also projected to increase its import demand for beef significantly over the period, and is projected to account for 28 per cent of the rise in global imports of beef.”

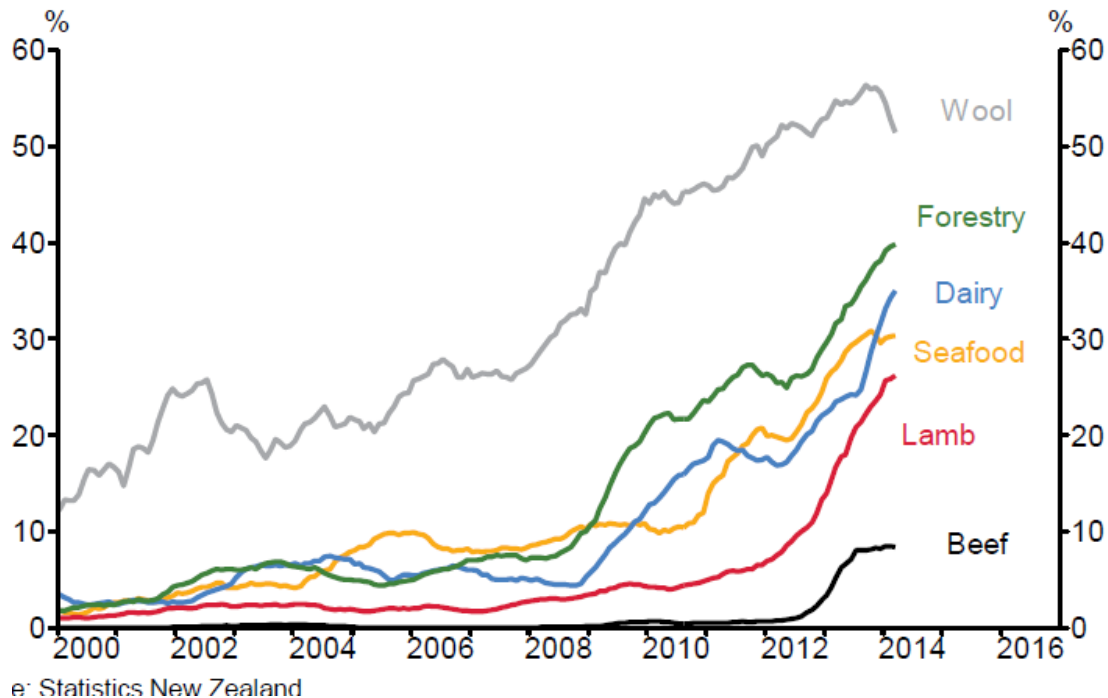
Figure 11 Sources of global agrifood import demand



Discussion:

The Graph outlines the opportunity for Sheep meat and Beef producers. It is important to note how the demand expectations for Wheat are balanced whereas India is forecast to be the driver of global dairy demand, and China the source of Sheep meat and Beef demand increase.

Figure 6: Share of primary exports to China
(annual average percentage)

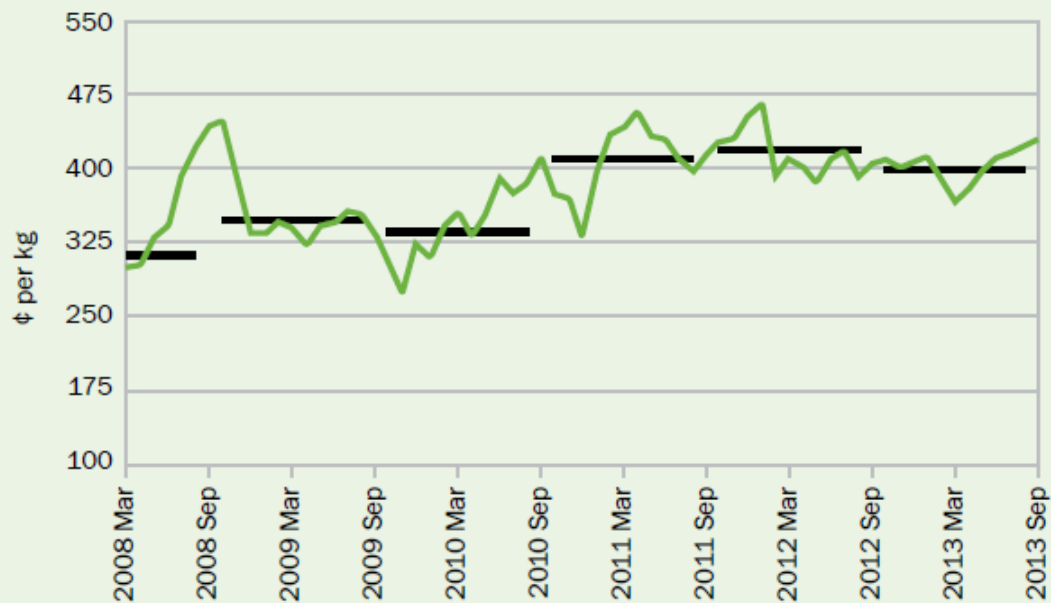


Discussion:

The Graph above illustrates how New Zealand's destination for Exports has changed dramatically in recent years with an enormous increase in the proportion of the nation's primary produce being sold to China.

The previous graph demonstrated a forecast of China increasing its imports of food (especially Meat) significantly and the graph above shows how this has translated in to an already much increased share of New Zealand's primary produce being sold to that Chinese market.

M bull month and annual average



Source: Beef + Lamb New Zealand Economic Service

Discussion:

The Graph above demonstrates that the Beef Schedule in New Zealand has been relatively stable for the last 6 years (compared to other price indicators for alternative livestock grazing options). Especially for the last 4 years, the price paid to Farmers has been consistent and this provides a platform for trading confidence. It is important to note that the price trends for Store Cattle in New Zealand are more volatile than the Meat Schedule price trend displayed above. The Store markets are more sensitive to climatic and feed conditions, and farmer sentiment. The greater volatility of the Store market creates more risk and opportunity for farmers buying and selling regularly on that market.

6. THE NEW ZEALAND DAIRY BEEF OPPORTUNITY

The opportunity lies in a resource in excess of 2.2m potential Dairy Beef animals currently being removed from the industry within 4 days of birth.

A *What is the Opportunity?*

While there is little prospect of utilising all those animals, and not the available land area or capacity to rear or graze them all, there is opportunity to infuse more Beef genetics, rear more of the annual Calf crop, and harvest significantly more income by capitalising on the projected growth in global demand for Beef.

B *What are the Consequences?*

A weakness of the current policy that some Dairy farms have of disposing of surplus Calves either at birth or within 4 days of birth is the vulnerability to sentiment and negative perception among urban dwellers domestically and abroad. The New Zealand dairy industry is highly vulnerable to a negative publicity storm caused by a piece of video footage being captured on a farm and posted through a variety of broadcast channels with no context or description of circumstances. This action could be undertaken by any animal welfare activist, or a disgruntled/disaffected farm staff member with an agenda.

Recent instances in other industries have highlighted the power, speed and effect of video footage broadcast in an effort to bring about a change fitting the ideology of the provider of the footage. Market access can be impeded immediately, and product value affected very significantly.

The ability for industry participants (in this instance Dairy Farmers and, by association, Milk Processors) to explain the context and circumstances of on farm Calf disposal would be extremely difficult because of the way footage would likely be shot and broadcast. Public relations management is most difficult when the defendant is on the back foot to accusations from the outset (irrespective of whether there is any credibility or foundation to them). This has been seen in other industries on many occasions where a scandal has been created and media have taken the opportunity to broadcast it – especially when there are images or footage that is graphic and stirs emotion in an audience.

C *Whose is the Opportunity?*

This is a very important question because there needs to be a series of shared benefits among the various stakeholders in any value chain.

Establishing a viable, sustainable, ethical, and 'PR-friendly' industry to deal with as much of the Dairy Industries by-product as possible (in this case Calves) should be considered as an important part of the Dairy industry maintaining its 'social licence' to continue operating its core business (milk production). This does not mean the Dairy industry should be subsidising

or coordinating the Dairy Beef industry, but there needs to be effort and understanding to ensure that as much of the nations Calf crop can be reared.

Drystock farmers need profitable, efficient livestock policies they can specialise in, or use as options to compliment their other farming policies.

Processors want the highest possible capacity utilisation of their facilities to get the best possible return on their Capital investment, and an even spread of throughput to allow them the ability to supply markets without having to build up significant Inventories at points during the year.

D What are the Barriers?

There are many areas where the existing Dairy Beef industry is delivering excellent outcomes by taking a by-product (Calves) and productively and efficiently turning that in to a significantly more valuable animal with a higher lifetime value. The Live Export trade of predominantly Holstein Friesian Heifers is an example of a use of by-product livestock that is capturing significant additional value (relative to the alternative of processing at 4 days old) for Dairy Farmers and providing excellent Gross Margins for Drystock farmers.

The Barriers preventing greater rearing and utilisation of the annual New Zealand Dairy calf crop for Beef production include the following:

- Volatile and fluctuating returns, and high business risk for Calf Rearers;
- Simple and easy existing disposal options for Dairy Farmers – on farm disposal or ‘Bobby Calf’ option;
- Calf revenue representing a small proportion of TFI for Dairy Farmers (no real relative financial incentive to pursue other options)
- Stigmas and prejudices from Beef raisers and finishers toward any stock with Dairy genetics (especially Jersey) due to beliefs that:
 - i they do not gain weight as quickly,
 - ii they do not yield as much saleable meat or
 - iii they have poor meat quality characteristics compared to that of traditional Beef breeds.

These factors see Beef Cattle carrying any Dairy genetics (especially those where there is even a suspicion of some Jersey ancestry) trading at a significant discount in Store markets when compared to the value of the equivalent animals clearly exhibiting the colouring of accepted Beef Genetics.

This discount starts at the beginning of the value chain with significant discrepancies in value appearing in the feeder calf markets (where 4 day old Calves are traded and price

expectations set for Calves traded privately). Bull Calves of Holstein Friesian ancestry with white feet and accepted markings can be expected to fetch \$100 - \$180 (depending on size) while an equivalent Calf with colouring that indicates possible Jersey ancestry is regularly discounted by at least 50% on its market value.

Bull and Heifer Calves from a Hereford sire and a Holstein Friesian dam can be expected to fetch from \$120 - \$250 and \$100 - \$200 respectively. Should those Calves feature a coat or markings indicative of **possible** Jersey genetic influence, the same 50% discount on market value regularly applies.

It is important to note that there are significant variations achieved at different Markets, even within the same region. So a simple method for increasing value of a Calf crop is selling at the Market that has the stronger buying bench.

The sorts of value discounts described above – based on visual appraisal and assessment – also feature in Store market values for Cattle at older ages as well (be it 6 months, 12 months, 18 month) though the severity of that discount reduces as animals get older and closer to age of processing. However the Payment schedules available from Meat Processors (\$ per kilogram of net Carcass Weight) feature little, if any, breed differentiation – especially for Beef destined to be processed in to grinding Beef. Breed premiums are available for Prime schedules for Steers and Heifers of Angus or Hereford origin. These premiums (typically of 10c/kg above the published Schedule price) are generally driven by Brand programmes set up for specific markets and or Contracts and is rarely for product to be traded on an open market.

Myth Busting

- Reference is made above to the stigmas and prejudices displayed by Beef raisers and finishers (and Stock Agents) toward any stock with Dairy genetics (especially Jersey) due to beliefs that:
 - i they do not gain weight as quickly,
 - ii they do not yield as much saleable meat or
 - iii they have poor meat quality characteristics compared to that of traditional accepted Beef breeds.

I have been unable to find any research reinforcing those beliefs. Conversely, the following information has been published:

“Scientific studies have consistently found no practical difference in saleable meat yield between dairy and British beef animals when slaughtered at the same age and liveweight (Branaman et al., 1962; Cole et al., 1964; Everitt et al., 1980; Nour et al., 1983; Muir et al., 2000).

“over 60 years of research into meat quality has consistently shown that there are no practical differences in meat quality between dairy and British beef animals, whether slaughtered at the same age or liveweight (Preston & Willis, 1974; Muir et al., 1998, 2000; Purchas, 2003).”

“Purchas (2003) noted that the differences in meat quality between cattle breeds in NZ were rare & smaller than the effects of age, nutrition and degree of finish.”

“The current NZ beef payment system, based on carcass weight, fatness and muscularity grades undervalues leaner Dairy carcasses compared to fatter beef carcasses even though they have been proven to yield similar amounts of saleable meat as a proportion of carcass weight.”

“In NZ, growth rate comparisons of pasture finished dairy and beef steers have shown little difference between breeds.”

“The energy required to deposit fat is almost twice that required to deposit protein (muscle)”

M.D. Brown, P.D. Muir, B.C. Thomson, 2012

“One of the most outstanding characteristics of beef from Jersey cattle is the high level of intramuscular fat. Even under pasture feeding conditions, the genetic potential of the breed to deposit intramuscular fat implies that a high level of marbling can be obtained at low carcass weights”

“Taste panels have consistently rated meat from Jersey cattle as being more acceptable due to its greater tenderness, juiciness, flavour and overall acceptability.”

“Jersey cross cattle have monounsaturated fat concentrations that are significantly higher than other breeds. The interest in monounsaturated fat level arises from the fact that these fatty acids, once seen as cholesterol “neutral”, are now considered cholesterol “lowering” and are preferable to high levels of polyunsaturated fats.”

S.T. Morris, E. Navajas, D.L. Burnham, 2001

These items above indicate that the Market stigmas and prejudices that favour Cattle of accepted ‘Beef’ origin, and heavily discount the value of Dairy Beef cattle with signs of Jersey ancestry are not based on facts, merely on beliefs. Conversely, the positive information about the Meat Quality characteristics of Jersey cattle strongly suggest that there should be a higher value placed on Dairy Beef animals with Jersey ancestry because of their higher inherent Meat Quality.

E How to capture the Opportunity?

This can occur through a number of changes being made:

1. Greater use of improved Pasture, Forage and Herb species by Beef Cattle graziers

Allowing

- much increased liveweight gains in young Beef Cattle allowing those animals to be processed at an earlier age (18 – 22 months of age rather than 30 – 34)

Allowing

- less Beef Cattle being grazed through a second winter – resulting in much better feed conversion efficiency and much reduced environmental damage,

Allowing

- better soil management, better \$\$ margin/unit feed input, much greater volumes of stock to be reared and finished annually

2. Increased use of Contracts to reduce Margin risk for all participants in the Value chain

Allowing

- Greater certainty for those in the industry and much reduced margin risk – especially for the Calf rearers who are regularly undercapitalised and, in many instances, young farmers trying to enter the industry.

3. Increased use of Beef Sires across the national Dairy herd

Allowing

- More calves suitable for Beef production, acceptable to market perceptions, and able to fit the criteria and payment schedules of the New Zealand Meat processing Companies.

4. Better understanding of the Meat Quality, Carcass Yield characteristics, and Feed Conversion efficiency of Beef cattle carrying Dairy genetics (especially Jersey) in an effort to break down the Livestock market stigmas and prejudices that see Value discounts applied.

Allowing

- Better market acceptance of Dairy Beef animals that don't fit the existing preferred 'profile' & less discounting of value toward animals based on skin colour & markings.

7. SEXED SEMEN

The increased application of Sexed Semen is a potential 'Game Changer' for both the New Zealand Dairy industry and the New Zealand Dairy Beef industry.

What is Sexed Semen?

Sexed semen is semen that has been separated into male and female. It is already widely used in North America as they capture the benefits associated with it.

Conception rates are lower in seasonal Dairy herds where there is more variability in feed levels and pressure to get breeding confined to a short period. Conception rates are higher in herds where there is a year round spread of breeding and more controlled feeding.

How can it be applied in New Zealand and what are the Benefits?

At present Dairy Farmers in New Zealand have most of their herds artificially inseminated each mating season in an effort to breed sufficient Heifers to replace 25% of their herd annually.

Sexed semen allows Dairy Farmers to inseminate fewer cows to get the required number of herd replacements, and to concentrate their breeding programme on the 25 – 30% of top performing cows in their herds which leads to faster levels of genetic improvement and productivity gain as a result. They also have the opportunity to use sexed semen across more of their herd and generate surplus Heifers for sale on to Domestic or Export markets.

The infusion of Sexed Semen in to Dairy herd Artificial Insemination programmes, and the elimination of male calves of Dairy origin from the annual calf crop, opens up the opportunity to use Bulls of Beef origin across a greater proportion of the herd, creating more calves that are better suited to for use as Beef animals and fit the Meat Company payment schedule criteria better.

It is important that these Beef Sires are 'fit for purpose' and appropriate for use in a Dairy herd, and have inherent genetic characteristics toward Short Gestation, and Ease of Calving, so that they do not hinder the primary role of a Dairy Cow – which is to calve quickly and easily, recover from the parturition, and start producing Milk immediately.

8. CONCLUSION AND RECOMMENDATIONS

New Zealand has an established and functional Dairy Beef industry. Existing value chains and enterprise options are available to farmers that can meet the needs and demands of different markets within the New Zealand pastoral farming sector.

A significant resource of animals is created by the New Zealand Dairy industry annually. The numbers indicate 2.3 million calves are not making it beyond 4 days of age, and the numbers also raise the question of what explains the 800,000 'hole' in the numbers annually. With doubt surrounding this, the resource for analysis *could* apply to potentially 3 million calves per annum.

The prospects for the Global Beef industry suggest that there is an opportunity for New Zealand to grow more Beef to meet growing global demand over the next 50 years.

The information above identifies large increases in global Beef demand, an increasing share of New Zealand's food exports going to China, and a Meat schedule market in New Zealand that has been stable for a number of years. These factors are strong foundations for any industry and for its inherent Value Chains to grow.

As the New Zealand Beef cow herds continues to shrink, growth in New Zealand's total Beef production can realistically only be expected to come from a larger Dairy Beef industry.

The possibility of sexed semen provides opportunity to improve the productivity and rate of progress in the New Zealand industry and also for the Dairy Beef industry.

The prospect of rearing more Calves from the Dairy Industry, sired by Beef Bulls, feeding them for a shorter duration on high performance pastures and forages provides a pathway to much more efficient and productive Beef production in New Zealand. Utilising the results of the Beef and Lamb NZ, MPI Sustainable Farming Fund initiative to finish Beef Cattle by 20 months is integral to creating farm systems that will provide Profitable Dairy Beef cattle enterprises, which in turn underpin the value of those stock back to the 4 day old Feeder Calf markets.

It is imperative that Beef Bulls used by Dairy Farmers are appropriate and do not interrupt the primary purpose of the Dairy Cow: to produce Milk. Beef Bulls used on these farms need to be of a Genetic type that is expected to produce smaller than average Calves, born quickly and unassisted, and allows the Dairy Cow to quickly recover from Birth and start her lactation cycle.

9. ACKNOWLEDGEMENTS

I would like to take this opportunity to thank all the individuals and organisations who have helped contribute to this research project.

Peter Keeling; Supply Chain Manager, Firstlight Wagyu

William Morrison; C E O, Ezicalve

Professor Stephen Morris; Institute of Veterinary, Animal and Biomedical Sciences, Massey University

ANZ Bank New Zealand Limited

10. REFERENCES

Brown M.D, Muir P.D, Thomson B.C, 2012 Dairy and beef breed effects on beef yield, beef quality and profitability in New Zealand: A review.

Linehan V, Thorpe S, Andrews N, Kim Y, Beaini F, 2012 International Outlook for Food Demand to 2050 on behalf of Australian Bureau of Agricultural and Research Economics and Sciences. Prepared for Australian Government Department of Agriculture.

Morris S.T, Navajas E, Burnham D.L, 2001 Beef Production from Jersey Cattle.

www.beeflamb.org.nz

www.dairynz.co.nz

www.statistics.govt.nz

www.reservebank.govt.nz

www.beef.org.nz

www.lic.co.nz

Disclaimer: The views and recommendations expressed in this report are the author's. They are based on information known by the author and sources which the author views to be reliable, but may involve material elements of subjective judgement and analysis. Unless specifically stated otherwise: they are current on the date of this report to the best knowledge of the author. The author does not make any representation as to the accuracy, completeness, or currency of the views or recommendations expressed in this publication. The author does not accept any responsibility to inform you of any matter that subsequently comes to their notice, which may affect the accuracy, completeness, or currency of the information included in this report, nor for any future use which may be derived from this report.