Maximising Your Asset

SOPHIA CLARK

Exploring possible strategies to cost effectively improve a 5050 sharemilker's herd

Kellogg Rural Leaders Course 35 2017

maximise

ˈmaksɪmʌɪz/

verb

verb: maximize

make as large or great as possible.

make the best use of.

KELLOGG Rural Leadership PROGRAMME

Table of Contents

SUMMARY

5050 Sharemilking as a path to farm ownership is a tried and true journey in the NZ Dairy Industry. Often, sharemilkers have to grow their herds quickly over a short period of time. For example, moving from a 270 cow farm up to a 500 cow farm. A sharemilker's herd is their biggest and most valuable asset. My Kellogg Rural Leadership Project explores strategies and attempts to quantify several strategies for sustainable herd growth.

Herd value in New Zealand is usually determined by a few factors.
Breeding Worth, Production and Cow Age. Herd growth must fall within these boundaries and be cost effective and sustainable.

This case study focused on a 77ha 270 cow dairy farm in the Matamata/Piako district.

Several scenarios were analysed that were applicable to this herd and interviews and a survey conducted which explored other farmers herd growth stories and strategies, with special focus on people who had undertaken these strategies themselves and their experiences.

After comparing several scenarios, it was decided that to "maximise" the herd owner's asset; herd growth will have to come from within. This will be achieved by breeding the herd to high BW proven bulls, attempting to increase 6 week in calf rate and breeding the bottom 10-15% of animals to easy calving beef sires.

Increased value from cull cows will be achieved by preventing udder damage.

Advice was also sought from farm consultants, one herd growth expert and 1 reproductive expert.

FOREWORD

After purchasing stock in 2016 at market rate, the owners have a long term vision for the herd. DNA testing is currently at the lab which will verify the ancestry of approximately 40 of the unrecorded animals. In calf R2 heifers were purchased from a local pedigree breeder exiting the industry and r1 heifers were purchased from the bottom line of one of NZ's top Jersey herds. As the cows were in calf to unrecorded bull this year. Jersey bull calves were reared and proceeds from their sale used to buy high BW Jersey and Jersey x weaner heifers from a farm in the top 5% for BW.

The goal is to grow the herd cost effectively to a larger size while maintaining genetic merit.

The herd owner's mission statement is "Grass fed, well bred"

ACKNOWLEDGEMENTS

I would like to thank the following people for their invaluable help with this project.

Melissa Stephen – DairyNZ
Jack Hooper – LIC
Frances King – LIC
Catherine Terry
Dan and Michelle Brice
Lycinda Lett – Agfirst
Michael Woodward
Hugh Edward
Michelle Burgess
Kieren Ross – ANZ Bank
Joanna Leigh – Top Notch Calves
Gene Roberts
Alister Neville
Mark Townshend and James Courtman of Crescent genetics
Patrick Aldwell, Anne Hindson and Desley Tucker from the Kellogg Rural Leadership Programme.

AUTHOR CONTACT INFORMATION

Sophia Clark

158 Wairere Road

RD1

Waharoa

3474

021332396

Sophia.clark@hotmail.co.nz

1. INTRODUCTION

Currently, the Dairy sector in New Zealand is experiencing pressure at several levels to increase environmental sustainability.

The genetic merit of the national herd has increased over the last 20 years, cows now produce more milksolids and the national herd size has almost doubled.

The 5050 sharemilking model is still viewed as a legitimate pathway to farm ownership, the problem is that due to lower milk prices, and increased competition for fewer jobs, the genetic potential of a sharemilkers herd is often scrutinized by potential employers. A sharemilkers herd is also their main asset as the cows generate the majority of farm income.

This project has compiled several possible herd growth scenarios that fit in with the farm policies. The data is both qualitative and quantitative but the research conducted was not sufficient or wide enough to provide in depth analysis. The project focuses on the case study farm, 77ha in the central Waikato, milking 270 jersey and jersey x cows with heifers grazed 1 hour away in Waotu. The findings of this project may not apply to other herds in different situations. The project is conducted with the assumption that a higher genetic merit herd, with the ability to produce more kg/ms at a lower stocking rate will result in a lower environmental impact. A higher genetic merit herd will also hopefully open up more job opportunities for the current sharemilkers and by maximizing their asset, reduce wasteage in the herd.

1.1 Overview of the Case Study Farm

Established in 2016, the herd is made up of Jersey and Jersey X cows and was formed from carryovers purchased from a large-scale low input farming operation and a capital line of heifers from a dispersal sale. R1 heifers were also purchased from a farm currently ranked in the top 5% for breeding worth in the country. Because the cows were in calf to natural mating, bull calves were reared and the proceeds from this were used to purchase high BW weaned heifer calves, again from a herd in the top 5% for BW.
Calves are kept on farm until 1st May, when they go to grazing and R2 heifers return in calf.

The farm currently supplies Fonterra.

This Farm is classified as a system 3 which, according to DairyNZ Economic survey is described as having Feed purchased for dry cows and to extend lactation.

▪ Approximately 10-20% of total feed is imported to the milking area to extend lactation (usually autumn feed) and for dry cows. This is in the form of 100t Palm kernel expeller.

Summer crops are grown with an average of of 4.5ha being sown in Barkant Turnips in 2016.

The herd owners have a goal of moving to a 400-500 cow 5050 sharemilking job at the end of 4 years.

General Farm Policies are

- All cows in together, no separate herds apart from lame/treatment cows
- No hormonal intervention

- 6 weeks of Ab to high BW Jersey then jersey bulls out (though in 2016 7 weeks of AB was done)
- Bottom 10-15% to short gestation, easy calving beef sires
- 4 herd tests per year
- Cows metrichecked and metricured pre mating if necessary
- Blanket dry cow
- Teat seal heifers

2. LITERATURE REVIEW

As a general rule, sharemilker's herds get worse (lower BW, lower kgms/ produced per cow) when they increase herd size quickly, on a budget. (NZ Dairy Statistics 2015/2016)

In the near future, it is possible legislation may be introduced which reduces the number of cows we can milk. Land prices have increased and therefore there is less scope to expand for most operators across all farming systems. Are we going to be able to just keep piling on cows sustainably in NZ?

2.1 Trends in the National Herd

The national herd size, after growing from 2,830,977 cows in 1994 to almost 5,000,000 in 2016 has plateaued (LIC 2017).
These cows are producing 100kgms/year more per cow than the average cow 20 years ago (LIC 2017). This is mostly due to genetics. The difference in cow production between the upper quartile and lower quartile of an average herd (comparing cows on an average 500 cow farm between 4 and 8 years

old) is (on average) 160kg MS, this correlates with genetic potential (breeding worth and production worth).

In 1994 there were 14649 herds milking on average 193 cows on 80 hectares - an average stocking rate of 2.41 cows/ha (DairyNZ Economic Survey) In 2016 There were 11,918 herds milking an average of 419 cows on 147 hectares with a stocking rate of 2.85 cows per hectare. The amount of dairy land in the country hasn't doubled but the average herd size has increased by 117%. It would be ignorant to deny that this has had at least some detrimental environmental effects.

J Chan Dorman (2012) conducted a project exploring the relationship between Traits other than production and the National Breeding objective in NZ, in this study the scenario was explored lowering stocking rate and improving per cow production Clarke et al (2011) and MacDonald and Clarke (2011) found that lowering stocking rate may be a profitable option on some farms, but must be combined with high genetic merit cows which have high intake capacity, high MS yield, high fertility, BCS recovery, high health, and high survivability.

2.2 Sharemilking in 2017

In 2016 16.8% of farms were run by 5050 sharemilkers. This is down from 22% in 2006. (New Zealand Dairy Statistics 2015/2016) There is an increase in competition for jobs, when first applying for 5050 jobs, farm owners scrutinize the herd as much as the herd owner. The higher quality a herd is perceived to be, the higher chance a sharemilker will have of achieving a sought after position.

2.3 Where Can Opportunities be found?

By closing this gap, and increasing the genetic potential of the national herd, we can reduce cow numbers and increase production - though this depends on the cows' ability to produce. With only 61.4% of the national herd being herd tested in 2016 (down from 87% in 1996) there are potentially very inefficient cows being allowed to carry on and pass their genetics on to the next generation. By identifying poorer producers and culling them (or at least by mating them to beef) the genetic potential of the national herd will increase.

In 2016 only 71% of the national herd was mated to AB, this was the lowest since 1988 (NZ Dairy Statistics). It is unclear what the other 30% of cows were mated to, dairy bulls or beef. The use of AI is very valuable for herd improvement as very few individual farmers around the country have the facilities to "prove" their own bulls.

Potential Environmental Benefits

While this study doesn't have a direct environmental focus, the indirect consequences of having a high genetic merit herd are that we can produce the same amount of kg/milk solids with fewer cows on the same area of land. If this study encourages farmers to think more about the effect of genetic merit of their stock on the environment then it has achieved its goal.

3. AIMS AND OBJECTIVES

The aim of this project is to discover:

“Is it possible to grow a herd quickly and cost effectively without sacrificing quality over quantity, as well as reducing perceived environmental impact”?

- Explore a number of different herd growth strategies with the help of industry experts and other farmers
- Weigh up pros and cons of individual situations
- Attempt to quantify the value of missed and potential opportunities to maximize herd potential
- Interview a number of people who have been through the herd growth journey to gain their perspective on herd growth and what they have achieved, what they would do differently, and where their biggest successes have been.
- Conduct a survey of dairy farmers to see their perspective on herd growth and to gauge their understanding of the herd growth journey.
- Create debate and explore different herd growth scenarios.

4. METHODOLOGY

Semi- structured interviews were carried out with several farmers, with an emphasis on people who have used differing strategies to grow their herds. Facebook and word of mouth were used to source people who weren't in my social circle. Attempts were made to keep the respondents as varied as possible.

Interviews were carried out over the phone based around a series of questions, though these questions changed slightly with every participant and their situation.

A survey was conducted using surveymonkey with a total of 111 valid responses over a period of 2 days, which exceeded expectations . The survey was promoted through several Facebook Groups. The responses were edited as some of the responses were not suitable.

A bank manager and a farm consultant were also interviewed.

Meetings were held with several industry experts to discuss the project and the direction it was headed.

Minda and Microsoft excel were used to attempt to calculate the opportunity cost, or potential benefit of several herd growth scenarios.

Microsoft excel was used to analyze quantitative trends in data.

Overall I attempted to make the project as specific as possible to the case study farm. Some of the strategies for herd growth used by some of the respondents weren't applicable to this particular farm. A lot of luck and seizing of opportunities presented was a major trend amongst respondents. Not all

people are presented with the same luck, and opportunities differ between regions of the country. If other herd owners are looking to this project to base their herd growth on, it is advised that they look at their own individual business and use this project as a rough guide as every farm is different.

5. FINDINGS

5.1 Where Can Potential Gains be made?

New Zealand Breeding Indices

The current Breeding Worth of the case study herd sits at 71, with a Production worth of 79 as at 27/5/2017. The goal of the herd owners is to comfortably sit in the top 25% for Breeding worth. The herd average should rise once DNA parentage confirmation of 40 mixed age cows returns from LIC and 2015 born animals are tagged into the herd. The heifers purchased born in 2015 are above average, and should bump the herd up into the top 25%.

A high indexing herd is simply worth more money. If the herd owners can increase breeding worth, then in theory, the herd value will increase.

"Breeding worth adds value because we sell a lot of stock - and people want to know they are getting good animals. It's a way of benchmarking."

– ***Catherine Terry, Aria***

"BW to me means resale value, the first thing people look at when purchasing your stock is BW" – Hugh Edward, Otorohanga

According to DairyNZ “Our National Breeding Objective (NBO) in New Zealand is to breed dairy cows that are able to efficiently convert feed into profit.” (DairyNZ Animal Evaluation Unit)

Breeding Worth (BW) is the index that we use to rank cows and bulls according to their ability to meet this objective.

New Zealand’s dairy industry is unique in that most of the milk we produce is exported as whole milk powder, compared to most other countries who supply fresh milk for local supply. We are far away from our end consumer market. Our cows are measured differently to other overseas dairy animals, with a grass based diet and a strict 365 day calving interval (Harris 2005). Our cows are predominantly outside, have a very short window between calving and mating, seasonal supply and predominantly calve in spring.

Breeding worth is made up of 8 traits measuring an animal’s Production efficiency and Robustness

1. Milkfat
2. Protein
3. Milk Volume (the less liquid produced, the easier it is for it to be converted into whole milk powder)
4. Liveweight
5. Fertility
6. Somatic Cell Score
7. Residual Survival
8. Body Condition Score

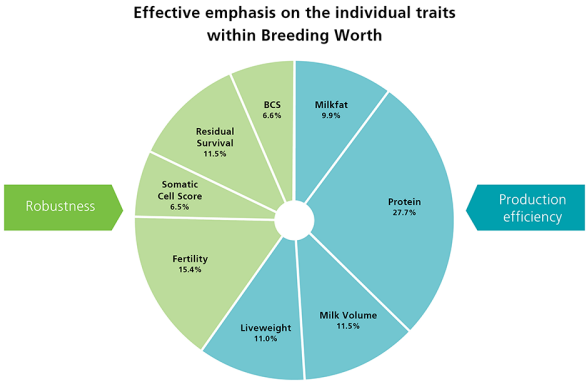


Figure 1 (Source – DairyNZ)

Figure 1 illustrates the current weighting placed on each of the traits as at 30/4/2017

As a general rule, most NZ farmers use Breeding worth as a guide for selecting bulls to breed profitable and efficient replacements (LIC 2017)

According to LIC, a bull with a BW of 220/84 is expected to generate an extra $220 profit per year, through breeding replacements which are more efficient converters of feed into profit, above the base cow of 0. This bull will only pass on half of his BW to his sons and daughters, the other half is from the dam.

A recent LIC herd improvement roadshow reinforced the value of Breeding Worth as a measure of an individuals cows potential to produce. Pictured below are

"I've had farmers comment that they doubt the index in general, because in their herd they have a case of high-BW cow who's not a great producer, or vice-versa. But what they're more likely to have is a misconception, because BW isn't about her production as an individual – it's about how well her daughters are going. More generally, it's about her wider family. So Breeding Worth is about reproduction – in other words, what

efficiencies her offspring are capable of. It's not about her milksolid production in any direct sense." – Greg McNeil, LIC

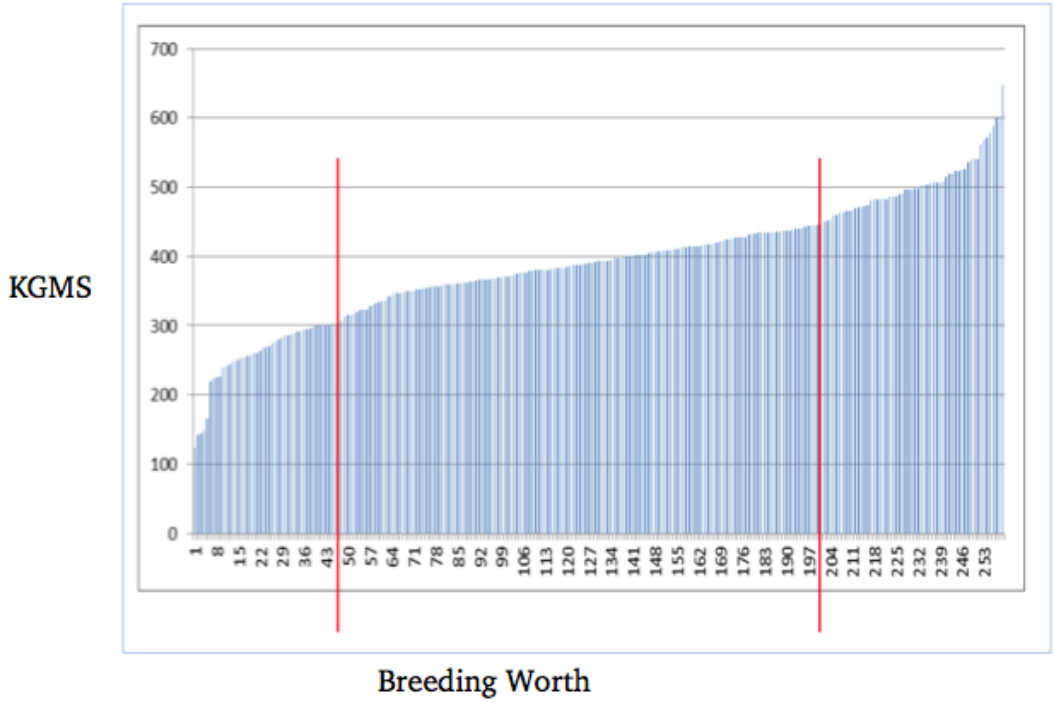


Figure 2 shows the relationship between BW (bottom axis) and average KGMS/cow/year produced (left hand axis) on an average 400 cow farm (LIC Herd Improvement Roadshow 2017). The difference between the upper quartile and the lower quartile is (on average) 160kgs/MS/cow.

When this is applied to the case study farm (see appendix 1 for calculations) There is a difference of $300 per individual r3 (high compared to low BW) and a difference of $165 between high and low BW age cows. All of the bottom 25% mixed age cows calved in the first 6 weeks calving in 2016 and half are now in calf to beef bulls, meaning there is a theoretical loss (If these cows were higher figured and therefore inseminated with high BW jersey) of 5 heifers.

	KGMS/year	Total Income @ $6
Bottom 25% r3	243	$2187
Top 25% R3	293	$1758
Btm 25% ma.cows	464	$2784
Top 25% MA Cows	409	$2454

Figure 3 (Source Minda)

The top 25% R3s also had (on average) 2 more days in milk, however there was no significant difference between the two groups of mixed age cows in terms of days in milk due to having to dry off due to flooding.

According to Agfirst consultant Lycinda Lett:
Your herd has to have the potential to be able to to produce milk at the end of the day. Recorded animals, good BW and good history of milk production.

BW To me means the potential of their genetics to be profitable. Not really the cow herself but all her genetics added up and the value of them. It's an indication of how her progeny will do down the line. BUT as with any index just an economic indication but always limitations – some traits are not included (udders, Traits other than production) and the more traits an index has the more watered down genetic gain will be in any one of those traits in general. – Michelle Burgess, Farm Owner and Bull Breeder

What does BW mean to you? – Anonymous Survey Respondent's Messages

" Definitely not the be all and end all when production is concerned but the value of a herd seems to really go up when BW does!"

"BW has it's place as a reference point in a NZ farming system, I think a lot of people don't understand BW,PW and LW and rubbish it, but if you know how it works you can do well and take advantage of it"

5.2 Getting the Basics Right

Culling and 6 Week in Calf Rate

"Culling is as important as mating, to be able to cull means having a low empty rate" Jack Hooper – LIC

This years empty rate for our case study farm was 11% overall, though the 6 week in calf rate was undesirable at 65% as the industry target is 78%

The first step in herd growth for this farm will be to ensure a 6 week in calf rate as close to the industry target of 78% as possible. While the herd owner was keen to start looking at different scenarios such as heifer AB and purchasing high BW 4 day old calves, closing the gap here will be vital for this herd's growth. It is important to focus on the basics before trying other strategies.

Using a template on the LIC 6 week challenge website
the calculated potential financial benefit to this farm is $24,840 by raising the 6 week in calf rate with an 11% empty rate to the industry target of 78% with a 7% empty rate. (see Appendix 1)

Survey Respondents messages

"Empty Rate has a big effect on culling"

"Poor 6 week in calf rate has big knock on effects"

"Lack of heifer calves born"

"Empty rate affects us as it means we have fewer in calf cows to choose to cull based on other factors e.g. pw, udder formation, SCC, health issues etc."

"We didn't buy in any animals, our herd grew naturally over time. Some years we didn't cull heavily but low empty rates have allowed us to grow over time"

Figure 4: (Source 6 week Challenge LIC)

Strategies for increasing 6 week in calf rate (that fit in line with the farms policy of no hormonal intervention) Include use of estrotect heat detection aids as well as tail paint pre mating to identify non- cyclers. This season estrotect "scratchies" were used in conjunction with tail paint.

5.3 Lowering Empty Rate

Reducing Wastage in the herd

The herd owners were happy with this year's empty rate, after 7 weeks ab (usually 6 weeks but was extended due to a wet spring with low sunshine hours) and 5 weeks of bulls (usually 12 weeks in total mating). It is hard to compare empty rates across farms as this can be artificially skewed with pre scanning culling and by leaving bulls in for longer. The lower the empty rate the more voluntary cull cows can be sold. Some high producing empty cows were sold in milk in February at a premium, which provided valuable cash flow. It would have been very beneficial for the herd to retain these high producing animals had they been in calf.

Where improvements could possibly be made are BVD testing the herd pre mating to ensure there are no PI (Persistently Infected) animals in the herd. The annual cost of BVD should this herd become infected would be approximately = $46,559.59 (see appendix for breakdown) Approximately 15% of NZ dairy herds are affected with BVD and 80% of herds have been exposed to the virus.

Currently bulls are tested and vaccinated before joining with the herd but with 15% of dairy herds in NZ being exposed to BVD at some stage (control BVD.org) there is always the possibility of infection.

Empty rate should in theory decrease in the 2017/2018 season. The young stock are well grown and the herd is in good condition, with an average body condition score of 5. This should leave room for selective culling and perhaps selling some surplus cows as budgets instead of culls.

The line of heifers born in 2015 were purchased from a top herd but are later born (this farmer keeps all calves) this may have reflected on the empty rate in

the heifers as they possibly had not reached puberty when the bulls were joined. This year weaned calves were purchased at a minimum of 100kgs. Having control of these animals from an earlier date should also (in theory) result in a lower empty rate. Adequate bull power was used across both herds and the herd owners are skilled in heat detection.

5.4 Increasing Salability of Herd

Is the herd really worth what the bank says it is?

"Non negotiable is a quality cow that can be re sold. Best cows we ever had were our first line of heifers. Those cows tripled our investment in our first year, which set up our business. If you want to grow you cant get attached." – Michael Woodward 5050 sharemilker, Canterbury

Growing your herd from within means being able to capture the value of your animals.

"If your herd had to be sold tomorrow – would you be receiving maximum value for your years of work?" LIC Shareholder forum 2015

"The Difference in herd asset value between very good, good, average and poor amounts to many dollars" LIC Shareholder forum 2015

Based on data from agrifax, high BW animals sold in the lower South Island fetch on average $100-300 more than low BW cows (July 2014 technical series value of genetic improvement Bryant J)

Cows that may be rejected from a herd include cows with poor udders, poor dairy conformation, cows with uncertain ancestry and cows over 8 years old. These are valued at works price instead of their value as dairy cows. The difference between a budget or "works" cow (around $600) and a sale cow ($1649) is $1049. If cows can be sold to become potential valuable members of another herd instead of being killed at the meat works then there is large potential for value capture here.

Steps that can be taken to increase herd salability include:

Improving Udders

Teat sealing heifers to prevent mastitis and the "light quarter" or "3 titter" animal that can result, 2017 will be the first time teat seal has been used in the case study herd. There were 10 cases of clinical mastitis in the 70 2014 born heifers in 2016. As these heifers were purchased it was difficult to determine what was pre existing teat damage (caused by cross suckling, trauma) The cows that got mastitis and sustained udder damage are unable to be sold and will be rejected by a purchaser, so their true value is not the $1649 that the bank values them at but in reality it is the cull cow price at the works.

The average cell count of the case study herd was

If buying in stock, make sure they are quality

"I never buy dry cows because you cant see their udders, or 3 year olds because they are heifers that haven't fired in their first year. I look at cows and see if I can make those cows better than what they are." Michael Woodward – 5050 Sharemilker, Canterbury

After speaking with two sharemilkers who had purchased stock to improve your herd, a trend of buying the best quality you can afford was observed:

"Taking North Island cows down to Canterbury. We can take them from doing 300 solids to 450 solids. Averaged $100 profit. By milking them for a year and herd testing proving their worth can on sell for a lot of money" – Michael Woodward.

After attending multiple clearing sales in late May, cow prices dropped significantly. Works buyers were purchasing the majority of stock. This could potentially be a strategy for herd improvement – selling poorer cows and purchasing quality cows to replace them. Especially from harder farms with low input. Carry overs are generally sold at a cheaper price than surplus cows, According to the DairyNZ In Calf Book "Genetics only makes a small contribution to whether a cows gets in calf on time" and "If less than 10% carryover cows are unlikely to be having much effect on overall herd performance"

Jack Hooper (LIC) presented a potential scenario to consider – "***If you have the ability to carry over more stock than you need during winter, you can calve those older cows and sell them in milk. You can use the proceeds from her sale to purchase two R1 heifers." Thus removing the issue of older cows that will be rejected by a buyer at the end of the season***. IRD Currently value dairy cows at $1649 and R1 heifers at $819.

We have a very strict criteria for buying cows now, they basically have to be bull dams. We bought our first elite cow in 2011. Since then we have sold 5 bulls to LIC, 3 to CRV and 4 to Liberty Genetics. – Michelle Burgess

Taking due care during dry cow therapy, several of the carry over cows purchased (from one farm) had been dry cowed using unsanitary practices.

This resulted in bacteria being pushed up the teat canal and damaging the udder. These cows may still produce well but are only able to be sold to the meat works as culls. This year best practice was employed during dry cow therapy using teat wipes, teat spray and gently heating tubes, along with only inserting the very tip of the syringe into the teat canal. Results cannot be seen until July 2017 (calving). At this stage there has been one case of clinical winter mastitis in the herd.

Recording ancestry correctly, unrecorded cows typically sell for less than recorded animals. DNA testing is currently being undertaken to determine sires for 40 animals in the herd. These animals weren't recorded due to a prior sharemilkers error. According to a stock agent, unrecorded cows sell for roughly $500 less compared to cows with recorded ancestry (recent sales have shown unrecorded animals similar to this herd – J JX - sell for works price of around $600-700) (Source – personal communication with livestock agents) .

5.3 Raising additional replacement heifers on milk powder to boost numbers

This was calculated at an average $6 payout. This is using a generic casein calf milk replacer from Brytec at $62.50 per bag

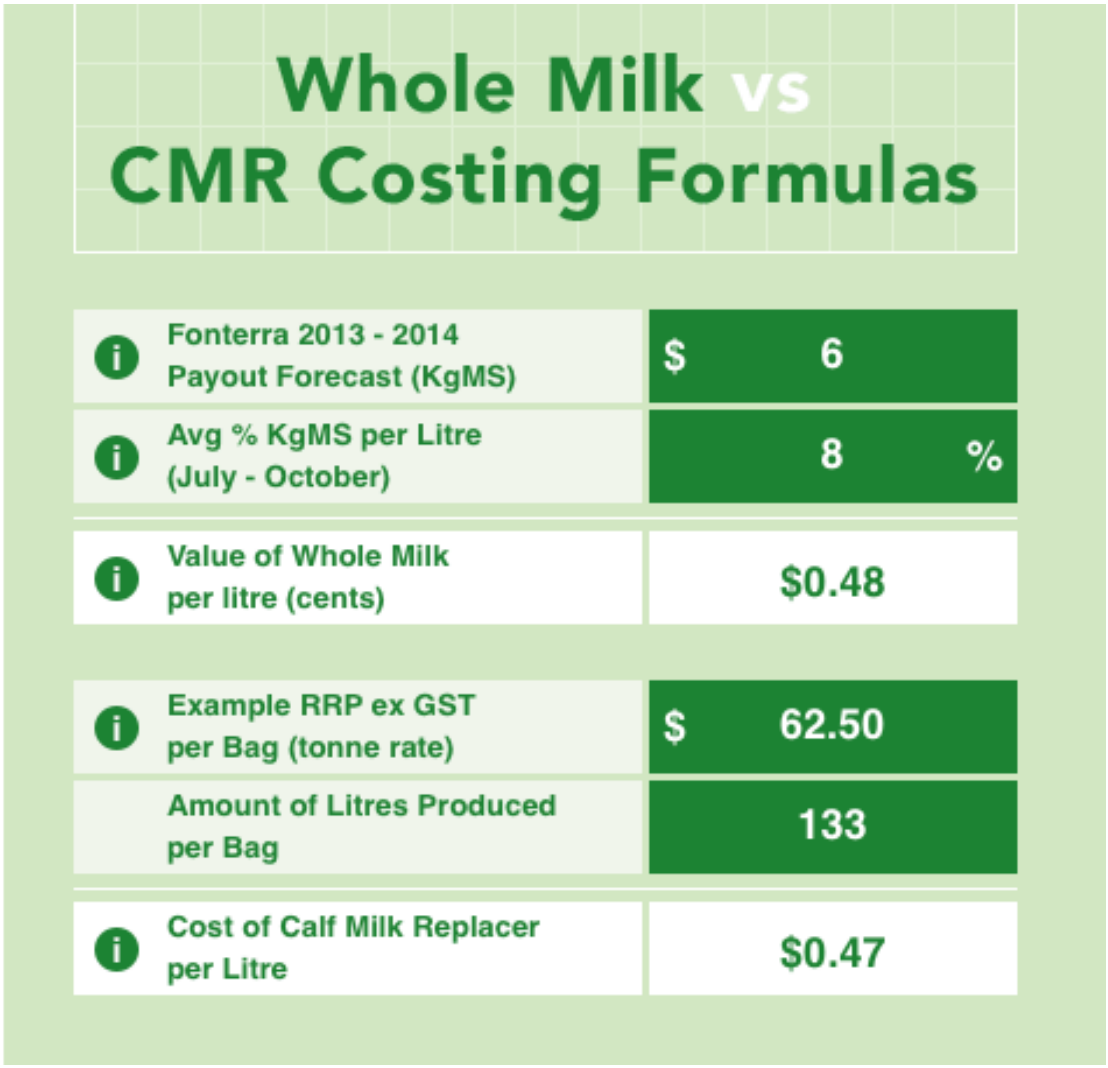


Figure 5 (Source Agbiz)

The cost of rearing calves on milk powder vs. whole milk is virtually the same when using Brytec calf milk deccox plus powder, (a casein based powder for calves over 15 days old) when the subject is receiving 100% of the milk cheque.

As 5050 sharemilkers our case study herd only pays for 50% of milk taken from the vat to rear replacement heifers and 50% of the calf meal as the farm owner pays the other half. The farm owner also pays for 50% of grazing for 20% replacements.

In order to rear extra heifers at a similar cost under this system, milk powder would have to halve in price. Additional affordable grazing would have to be found and calf meal would perhaps be rationed.

"Did you make any money at end of rearing? – You want profit! It shouldn't cost you to stand still!" –Lycinda Lett, Agfirst Consultant.

Another issue on this farm is the lack of shed space for the calves (only room for 50 calves) and no sheltered "calf paddocks". Once the calves go outside, they go outside permanently. The sharemilkers are contractually obliged to rear only 20% replacements each year and one beef animal for the farm owners. This restricts the number of calves that can be kept on the property. With a large number of animals contained in a small space the potential for disease increases and grass is valuable on the milking platform as it fuels the largest farm earner, Milk.

No guarantee of return on investment. A lot of up front costs – then what do you do with all those extra calves? You have to do something with them at the end of those two years if you don't have a bigger job and there's not a massive market for small lines of heifers" - Lycinda Lett Agfirst

According to ANZ bank's rural manager Kieran Ross, the current bank manager for the case study farm

(Rearing extra heifers, carry overs etc.) "only really works when you have access to cheap grazing or lease"

In the Matamata/Piako district, demand from local potato growers, as well as racing stables and dairy has driven the lease price well above the national average of 1700 $/ha/year .
A neighbouring property is leased for $2400/ha/year

In other areas of the country a scenario such as this could have great potential for herd growth, though for the case study farm it isn't applicable.

(rearing extra) "can impact on ability to reduce current debt"

"Focus on doing well at your current position, paying off debt and doing good on farm production and we will help to fund you to the next step" – Kieran Ross ANZ

5.4 Heifers reared by an Independent Contractor

Many herd owning sharemilkers are limited by shed space, farm staff and contracts which limit the number of calves reared. A possibility that could be explored is the rearing of heifers between 4 and 7 days old by an independent contractor.
Local business "Top Notch Calves" rears heifers at a set cost of $360 to 95kgs, which includes milk, meal and animal health treatments.

This could be something the case study sharemilkers look into further in future, especially in the final season of their contract.

5.5 Sire Proving Scheme/Progeny Test Scheme

Using Milk and TOP (traits other than production) information from a bull's daughters, it takes LIC seven years to get an accurate estimate of a bull's genetic merit (or breeding worth). Only after that "progeny test" period will the bulls' genetics become commercially available to the nation's dairy farmers. This is the traditional method of "proving" a bull's

value as a breeder of dairy cow replacements (Genomically selected bulls – An Update, LIC)

Both LIC and CRV Ambreed offer discounted semen via their Bull Proving Schemes, LIC offering it for $8 in the cow, which is a very reasonable rate.

Both schemes require the herds to be stable, with LIC requiring a 4 year commitment to the scheme. They also offer DNA profiling of the animals, LIC as calves, CRV as heifers entering the herds.

All of the farmers interviewed who are members of sire proving or progeny test schemes were attracted initially by the price of the genetics,
At $8 straw in the cow (LIC) it is $14.95 cheaper than the nominated genetics the sharemilkers are currently using.

With the rise in Genomic testing, reliability of sires is increasing, with the ability to genomically test both bulls and heifers for genetic markers for key traits and increase the rate of genetic gain by reducing the need for proving. Although this has proven challenging in New Zealand where the majority of cows are crossbreed.

Potential advantages of progeny testing or sire proving are

- Potential increased rate of genetic gain
- Significantly reduced costs for AB/mating period
- DNA Profiling of animals
- Payment for heifers reared

Disadvantages include

- Must sign a contract to undertake the scheme for 4 years (LIC)
- Potential for a “mixed bag” of sires

- Potential for a wide variation in young stock
- Must rear a certain number of replacements each year

The sharemilkers are members of Jersey New Zealand and have the ability to purchase "Jersey Future" semen from young bulls bred by Jersey NZ members (in conjunction with LIC). These straws are purchased at $7. These have fewer conditions attached than the two main bull proving schemes in NZ.

Other Farmers Experiences

The first 2 years (sharemilking) was about survival. Did sire proving to keep costs down. – Michael Woodward

Sire proving in conjunction with DIY AB reduces my mating costs from potentially $10,000 to around $1200 – Hugh Edward

Our friends recommended it and LIC approached us, we were leasing a farm and looking to buy. We have moved to the top 20% in BW and PW. Tried to keep a young herd and rear lots of replacements.
We have never had a problem with bad udders, we are fully supportive of it. Cheap semen and free DNA testing. – Gene Roberts

Herd owner's experience

"After purchasing a line of 2014 born animals from a sire proving herd, the variation between animal production is huge in this line of cattle. These bulls are sourced from high genetic merit herds, put through genomic testing, proven in several herds and several of the bulls still managed to produce consistently poor offspring. Personally, I would rather take the chance on a calf sired by daughter proven bulls purchased from an

established herd. Others experiences may differ, especially farms who are able to rear extra heifers."

This may be a strategy the case study farmers explore in the near future after they move to a larger farm and buy a larger herd. The financial benefits of sire proving are enticing, along with DNA profiling reducing mis mothering. Although the question needs to be posed, is the money saved on ab worth the trade off in potential production loss in heifers?

5.5 Keeping Heifers from naturally mated r2 Heifers from a recorded bull

The average increase in BW points per year is 10. In order to capture some of this value, some people choose to run a high BW, DNA recorded bull with their r2 heifers and keep the calves, especially those people who may have a runoff too far away to ab heifers or have a particularly high genetic merit herd. Or at least in order to have some options to choose from if a poor 6 week in calf rate is achieved on the main herd.

A rough estimate for the number of replacement heifers that could potentially result from keeping heifer calves from natural mated R2 heifers is **14 heifer calves from 55 R2s**. (see appendix 9.3 for calculations)

The trade off in this instance is reliability and some BW points. To put it in perspective:
LIC take 200 bull calves to be part of their sire proving scheme every year,

" LIC checks out each bull's DNA to ensure desirable traits are present in the genetics. LIC then checks out both the mother and the son to ensure its

physical traits are desirable, and that the bull calves are in good condition" (LIC 2015)

"From this 200, approximately 20 graduate to the bull team" (LIC)

It takes 3 years for a heifer to be milking in your herd. By using Daughter proven bulls that have been proven through a tried and tested scheme, as well as genomic testing for traits, farmers can be assured of what they are purchasing

I spoke with several people about their experiences with naturally mated animals

"In my opinion it is better to keep an ab calf from a poorer cow than a naturally bred one. That bull generally has thousands of daughters vs. a heifer that hasn't lactated yet from an unproven bull" Jack Hooper – LIC

I was given access to data from Crescent Genetics, one of New Zealand's top jersey herds to see if I could find a difference between the lactation worth of animals sired by AB vs. Natural Mating. Some of the highest performing heifers (based on their lactation worth) in the 2014 line of this herd had been sired by natural mating. Several other herd owners had kept heifers from natural matings but these were crossbreed herds and therefore couldn't be compared equally due to variable breed percentages.

Number	Birth ID	Sire Bull Code	Sire Name	Index BW	Index PW	Index LW	Sex
583	GFW-14-41	308533	Pukeroa Tgm Manzello	168/44 g	335/50	456	F
256	GFW-14-12		Pukeroa Tors Baron	210/41 g	295/49	374	F
198	GFW-14-85		Pukeroa Tors Baron	202/41 g	288/48	367	F
301	MQJT-14-219		Ellison Lt Lauren S3J	154/34 g	280/48	363	F
244	GFW-14-64		Ellison Lt Lauren S3J	156/33 g	270/48	350	F
118	GFW-14-97	308533	Pukeroa Tgm Manzello	193/49 g	271/50	346	F
265	GFW-14-39	310503	Greenmile Mm Maimai Et	195/44 g	250/50	332	F
28	GFW-14-94	310024	Kerrs Wtl Kauri	156/65 g	234/49	323	F
1	GFW-14-10	308533	Pukeroa Tgm Manzello	161/67 g	245/50	321	F
402	MQJT-14-213	309811	Crescent Kenya Bounty	185/42 g	252/50	314	F

Figure 6: Source Crescent Genetics

"You can see why I am pretty happy to keep calves from R2 hfrs incalf to good NM sires" – Mark Townshend

Figure 6 illustrates the top 10 heifers from the Crescent herd ranked on LW alone. There was a sample size of 162 animals and the majority were sired by Artificial Insemination. The heifers sired naturally are sired by the bulls "Pukeroa Tors Baron" and "Ellison LT Lauren" . Pukeroa and Ellison studs are two of the highest ranking BW herds in the country and have generations of breedin behind them.

This doesn't take into account traits other than production (TOP) or any other factors other than lactation worth, which is an index that ranks cows within a herd for their current season performance. I had no animal health data or calving date information. A Recorded lease bulls aren't as high BW as using premier sires or other high BW bulls from ab companies. They have a lower reliability and in most cases haven't been genomically tested, unless they have been tested and rejected by ab companies.

Crescent genetics is also one of the highest BW herds in the country with an intense breeding program.

Personally in the case of the case study farm I would choose not to keep heifers from first calvers due to the lack of reliability and herd quality.

I would pose the question, if it costs roughly between $1 and $1.40 per bw point to purchase a 4 day old heifer calf from a high bw established herd, then is the trade off worth it?

A heifer's heifer is an unknown in this sharemilker's herd, it has not been established long enough, in my opinion, to warrant using low reliability genetics. Perhaps if bulls had been purchased or leased from one of NZ's top herds, then maybe. By using recorded and DNA tested bulls, If these can be leased for a similar rate as unrecorded bulls, at least the herd owner has options. I personally would not recommend keeping calves from recorded bulls in this case study farm.

5.6 Purchasing extra 4 day old calves

As the above scenario shows, in this instance it isn't worth rearing additional calves (over and above the standard 20% replacement rate). This would be a potential scenario to consider if the case study farmers had additional shed space, and were able to purchase 4 day old calves at a cheap rate and have access to milk purchased from other farms due to rejection – for example, temperature, cell count, penicillin contamination. Milk powder is too expensive and the herd owners are currently restricted by their sharemilking contract.

5.7 Using Low Birthweight Beef Bulls over Bottom 10-15% of herd

In 2016 25 straws of beef semen were purchased, 10 Murray Grey, 10 Speckle Park and 5 short gestation Hereford.

A dairy cow is currently valued at $1649. After speaking with a stock agent, Angus or Murray Grey x Jersey Feeder calves are worth (on average) between $60 and $100 during peak demand, There is minimal demand for Jersey x Hereford calves due to their colouring and tendency to throw broken faced calves. I couldn't find any data for speckle park x animals. It is imperative that low birthweight beef bulls are used otherwise there is the potential to ruin a dairy cow for the sake of a calf worth slightly more at the sale then on the bobby truck.

In 2016 the average price the case study farmers received for bobby calves was $7

In a herd such as this the value of beef cross calves are in the reduced temptation to keep heifer calves from poorer animals or preventing keeping poorer calves as a result of mis-mothering (from 97 herds DairyNZ found that 23% of the cows tested had incorrect sire information). The beef calves are "markers" of these poorer cows.

Jersey Bulls are used after the first 6 weeks of AB, they are cheap to buy or hire and well know for their fertility and calving ease. There is less demand for later born beef calves sired by bulls, especially out of jersey cows.

5.8 Other Strategies to Consider

Ab of heifers at grazing

This would disagree with the herd policy of no hormonal intervention, either using CDIR or PG to Sychronise heifers. Also bulls still need to be purchased/leased to be run with heifers. Heifers are grazed an hour away and mating is one of the busiest times of the year. There is no time to observe the heifers during the day to see which animals are on heat.

However, mating heifers to AB is one of the quickest ways to increase genetic gain.

Several survey respondents and interviewees had achieved success with heifer AB, using CDIRS, while others considered it a potential waste of money – the trade off between money and time spent and heifers reared was too great.
In future it may be possible to AB heifers once the case study farmers move to a larger sharemilking job, though in the current situation it isn't practical.

Use of Sex Semen in conjunction with easy calving beef semen

According to CRV Ambreed's 2017 Catalogue "Conception rates are around 10-15% lower than non sexed semen" and "less than 10% of the sperm carry the male 'Y' chromosome"

If a cow doesn't get in calf in the first round of AB due to poor semen quality/handling then the potential for income loss at a $6kgms payout.

Based on herd testing data from 21/9/2016 for the highest BW cows in the herd, over which sexed semen would be used, the cows were doing an average of 2kgms/day
So a rough cost per cow estimate of a 3 week later lactation for one cow would be
2 x 21 days (cows were doing 2kgms/day average for their first 3 weeks lactation)
x $6kgms
= $252

At $45 a straw this is $28 more expensive than the price the sharemilkers currently pay for semen

There is still the potential for 10% bull calves

Due to the lower conception rates in dairy cows vs. heifers, it is recommended that sex semen be used on heifers rather than cows. In this sharemilkers situation, the heifers are grazed over an hour away and artificial insemination isn't practical.

If Sex semen was used over the top 25% of the herd in order to guarantee heifer replacements from these top animals then an option could be for easy calving beef semen to be used over the rest of the herd to capture the early beef calf market.

The majority of the case study herd is jersey, Jolly (2014) concluded that Bull and heifer calves from a Hereford sire and a Holstein Friesian dam can 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 (Cook, 2015).

The use of beef semen across the poorer producing fresian type cows could potentially produce valuable income from early beef calves. The case study farm calves on the 10th of July. There is potential to capture some of the early dairy beef 4 day old market with some of these earlier calving animals. This also reduces the risk of poorer genetic merit animals being mis mothered and mis recorded and kept instead of higher merit animals, due to the easy identification of beef x calves . In a study by DairyNZ, it was found that 23% of the cows tested from 97 herds had incorrect sire identification.

The bulls used to produce sex semen have lower genetic merit than the main bull teams promoted through CRV and LIC.

I spoke with Reporoa Sharemilker Alister Neville who in previous years has used sex semen over his cows as part of the export heifer scheme with LIC about his thoughts

"We have a Friesian herd, so could send export heifers to china for $500 at 10 days old through LIC export scheme."

"CDired heifers and inseminated with sexed semen
(We still cdir and ai heifers but not with sexed semen)"

"Got to pick and choose from the heifers that were born so we could grow herd quality."

"I don't use sex semen now as we finish bull beef – Friesian bulls are worth good money as well."

"Having that $500 cash was worth the trade off of slightly lower in calf rates"

"No bad experiences, just need a good tech doing best practice"

With a jersey herd there is also the potential for 4 day old bull calves to be sold at a premium. There is a high demand for jersey bulls to use as easy calving "heifer bulls". The case study farm has the wrong breed of cow to capitalize on the use of sex semen.

The one thing, in my opinion we need to remember as Jolly summed up in 2014 "there is no real motivation to produce a valued calf, as the dairy farmers primary driver is to produce milk cost effectively"

Embryo Transfer

Only one of the farmers I spoke with for my project had done embryo transplant work on their herd.

The costs for the average 50:50 sharemilker who has high debt levels and is just building their herd could possibly be prohibitive. There is also a high level of risk involved. If only 50% of the pregnancies hold then those cows miss

Michelle Burgess who has bred bulls for CRV,LIC and Liberty genetics had this to say about her experiences with embryo transplants:

We bought in elite cows, started buying them as empties. We flushed them and this resulted in bull calves or good heifers. Some of the progeny turn out average, some in top 10%. Did approximately 130 embryos a year. 50% of the pregnancies hold and half of them result in heifer calves. At least 100 cows in our herd right now that are as a result of embryo transfer work or their daughters. It costs a lot at the start and is a long

term thing to get a financial return. We have eased off since purchasing a farm.

We have a very strict criteria for buying cows now, they basically have to be bull dams. 2011 was when we bought our first elite cow. Since then we have sold 5 bulls to LIC, 3 to CRV and 4 to Liberty Genetics.

In future this may be something the herd owners look into, as they are very interested in breeding.

Body Condition Score and Once A Day Milking During Early Lactation

Currently the average Body condition score (as at 6/6/2017) of the herd is 5 and the heifers are on target at BCS 5.5 according to the Incalf Book (DairyNZ) Cows that calve who are too thin, generally take longer to start cycling after they have calved. Cows are less likely to get in calf on their first insemination – the later they cycle, their chance of getting inseminated more than once decreases. The chance of a cow conceiving on her 2nd heat is 7-8% higher than on her first heat. Having a higher Body condition score (but not above 5.5) increases her chances of cycling in the first 6 weeks of Mating (during AB).

Milking once a day during early lactation can minimize loss of body condition score. Unfortunately this isn't an option on the case study farm. If the farm and herd was larger and paddocks set up differently, then the farmers would definitely consider milking heifers once a day for their first lactation.

6. Discussion of Results

6.1 What we are Already Doing Right

By breeding the herd to high Breeding Worth sires vs. other options such as “economy” bulls, sire proving or cheaper unproven straws the case study farmers are already gaining a head start in BW. By purchasing DNA verified heifers from top herds vs. unrecorded or lower animals the herd owners can be assured of quality and reliability.

Mating bottom ranked, early calving cows to beef: a beef straw as opposed a high BW straw costs less and removes the potential of poorer producing, undesirable cows having daughters in the herd, whether by mis-mothering or the temptation to keep a calf from a poorer cow. Early beef calves fetch a premium at the sales and serve as a “marker” making it easier to match cows with their calves.

DNA testing mixed age cows with uncertain sires. Due to previous lower order sharemilker error, a portion of the herd is unrecorded or mis recorded. According to DairyNZ 23% of all cows in New Zealand have uncertain parentage. This will clear up any uncertainty and increase reliability.

Average somatic cell count of 85 vs. average Waikato farm in 2016 (NZ Dairy Statistics 2015-2015) having a cell count of 181. This reduces the need to cull on high cell count and mastitis.

Only 61% of cows were herd tested in the Waikato in 2015/2016 (DairyNZ) , herd testing regularly results in valuable data. This leads to accurate production worth records and makes culling and mating decisions easier.

Using heat mount detectors vs. tail paint exclusively – according to the InCalf Book, the use of heat mount detectors “scratchies” increases the rate of heat detection. The case study farmers are well trained in heat detection.

KGMS/Ha produced was 1,171 vs. 1155 over the Matamata/Piako district (DairyNZ) , despite having to dry off several weeks earlier due to flooding.

Cows and heifers are at their ideal condition score pre calving, 5 and 5.5 respectably.

No down cows for the 2016/2017 season.

6.2 Where we can improve, and changes to be implemented in the 2017/2018 season

In 2017/ 2018 season Teat sealing will be used for the first time, this will hopefully reduce the amount of heifer mastitis and the resulting udder damage. This should reduce some wastage within the herd and increase future salability of animals that would have otherwise only been worth works price.

BVD Testing – Bulk Milk BVD testing will be undertaken this year to identify if there are any persistently infected animals present in the herd. If a PI is present she can be identified and culled.

A dosatron has been installed and trace minerals will be administered through the water system. This will hopefully address any mineral deficiencies that may be present (blood testing and liver biopsies will be performed)

Hopefully in the 2017/2018 season a higher 6 week in calf rate is observed if these strategies are implemented.

Hopefully the weather during calving and mating is more favorable

The herd owners are getting the basics right most of the time. This has allowed success in their first season 50:50 sharemilking.

6.3 Trends and observations of other herds

From what I have learnt from this research, a trend observed amongst other herd owners was that they had seized opportunities when they were presented. These opportunities came in lots of different forms. Many other people had been able to implement different strategies that they were able to exploit such as heifer AB, purchasing established herds and rearing extra replacements due to different conditions in their contracts, their ability to lease cheap land or family assistance.

It was difficult to gage what is the “best” strategy across all farms for herd growth as there are such a large variety of farm systems in the NZ dairy industry.

7. Recommendations

After extensive discussion, interviewing and research,

I conclude that the “best” way to grow the case study herd is to focus on the basics - increasing 6 week in calf rate using good management strategies, attempting to reduce empty rate and continuing to focus on the day to day running of the farm under the current policies. Due to farm location, options are limited for lease blocks and heifers are grazed too far away for artificial insemination to be practical. In future the herd owner’s situation may change and there may be other opportunities that arise, in different situations, some of the impractical (in this situation) “growth strategies” may become viable.

In conclusion, it is all about making the most of what you have with what you have got. By having a herd of cows that are worth for sale what the bank values them at there is no artificial inflation of asset value and more options for surplus cows. Farm management shouldn’t be too complicated and it shouldn’t cost you money to “stand still”. As long as the herd’s genetic merit is increasing above the average of 10bw points a year, the cows are in good condition, don’t suffer udder damage and get in calf early then herd growth will happen on it’s own. When it comes to large increases in herd size over short periods of time, if the herd owners have proven themselves to be profitable farmers then the bank will fund this increase. Once herd size has increased there are sire proving options to cut AB costs while still increasing genetic gain.

9. References

Agbiz 2014. Wholemilk vs. Calf Milk Replacer, Retrieved from http://nzagbiz.com/CalculateNow (Accessed 15/4/2017)

Anonymous. 2015. NZ Dairy Statistics 2015-2016. Dairy NZ & Livestock Improvement Corporation Ltd, Hamilton, New Zealand

Anonymous. 2017 (Presented By Malcolm Ellis) Herd Improvement Roadshow 2017, Livestock Improvement Corporation Ltd, Hamilton, New Zealand

Anonymous 2017, CRV Ambreed 2017 Catalogue, CRV Ambreed Ltd, Hamilton, New Zealand pp 14

Bryant, J. 2014 Demystifying the Black box – genetic evaluation, DairyNZ Technical Series – Issue 22, July 2014 pp 1-8

BVD Steering Committee, 2017, BVD Control in Dairy Cattle, retrieved from http://www.controlbvd.org.nz/sites/default/files/BVD_SC_MSD_Farmer_Brochure-DAIRY.pdf (Acessed 29/5/2017)

Chan-Dorman, J. 2012. A Study of Traits Other Than Production in the New Zealand Dairy Industry.

Clark, D; Beukes, P; Romera, A; Chapman,d. 2011: Future Farming Systems. Proceedings of the South Island Dairy Event, 2011, Lincoln University, Canterbury. Pp 239-252

Cook, D. 2016. Search for the Sweet Spot in the NZ Dairy Industry, Kellogg Project.

DairyNZ Animal Evaluation Unit (2017) Cow and Herd Averages, retrieved from https://www.dairynz.co.nz/animal/animal-evaluation/cow-and-herd-averages/ (Accessed 20/4/2017)

Harris, B. (2005) Breeding Dairy Cows for the Future in New Zealand, NZ Veterinary Journal 53

Harris, B (2016) LIC Bulleitin, Genomically Selected Bulls – An Update retrieved from http://www.lic.co.nz/lic_Genomically_selected_bulls_an_update.cfm (Accessed 20/4/2017)

Hooper, J, (2015), Preparing a Herd for Sale – A personal Viewpoint, LIC Shareholder Forum 2015, Livestock Improvement Corporation, Hamilton New Zealand.

Jolly, A. 2016. Bobby Calves: The Game Changers within NZ's Supply Chain, Kellogg Project

Livestock Improvement Corporation (2017) 6 Week Challenge, retrieved from http://www.6weeks.co.nz (Accessed 1/5/2017)

Livestock Improvement Corporation (2016) Massive Milestone for Dairy Industry – LIC tags it's 10,000th Bull, retrieved from: http://www.lic.co.nz/lic_News_Archive.cfm?nid=633 (Accessed 16/4/2017)

Livestock Improvement Corporation (2012) Fundamentals of Breeding Worth, Retrieved from http://www.lic.co.nz/lic_Fundamentals_of_Breeding_Worth.cfm (Accessed 3/5/2017)

Mcdonald, K and Clark, D. (2011) Should We Be Milking Fewer Cows? Proceedings of Face to Face, 2011, Hawera. Pp 23-31

9. Appendix

9.1 Calculations for high BW vs. low BW

	Lactation Details to 10/04/2017									Current Indexes		
	Cell Count	Milk (l)	Milkfat (%)	Milkfat (kg)	Protein (%)	Protein (kg)	Milk-solids (kg)	Days in Milk	SCC Exceed	BW $	PW $	LW $
Averages	**55**	**2942**	**5.67**	**166**	**4.29**	**126**	**293**	**252**	**0**	**120/41**	**127/52**	**144**

Figure 2 shows the 2016/2017 season production figures for R3 heifers in this herd in the top 25% BW for the national herd. Cows were herd tested 4 times

	Lactation Details to 10/04/2017									Current Indexes		
	Cell Count	Milk (l)	Milkfat (%)	Milkfat (kg)	Protein (%)	Protein (kg)	Milk-solids (kg)	Days in Milk	SCC Exceed	BW $	PW $	LW $
Averages	**114**	**2509**	**5.55**	**139**	**4.15**	**104**	**243**	**249**	**1**	**9/34**	**-18/48**	**-39**

Figure 3 shows the 2016/2017 season production figures for r3 heifers in this herd in the bottom 25% BW for the national herd. Cows were all herd tested 4 times

293 x $6/kgms (potential for sharemilker to capture 50%) = $1758
243 x $6/kgms = $1458 $300 difference in average annual revenue per r3 heifer between top 25% bw and bottom 25% bw

Top ¼ 293kgms

Bottom ¼ 243kgms

Difference 50kgms

X cows in bottom ¼ 9

= 450

x $6

= $2700

	Lactation Details to 10/04/2017									Current Indexes		
	Cell Count	Milk (l)	Milkfat (%)	Milkfat (kg)	Protein (%)	Protein (kg)	Milk-solids (kg)	Days in Milk	SCC Exceed	BW $	PW $	LW $
Averages	**115**	**4549**	**5.97**	**269**	**4.31**	**195**	**464**	**249**	**1**	**111/49**	**144/78**	**144**

Figure 4 shows the 2016/2017 season production figures for 4-8 year old cows in the top 25% BW. Cows were herd tested 4 times

	Lactation Details to 10/04/2017									Current Indexes		
	Cell Count	Milk (l)	Milkfat (%)	Milkfat (kg)	Protein (%)	Protein (kg)	Milk-solids (kg)	Days in Milk	SCC Exceed	BW $	PW $	LW $
Averages	**94**	**3913**	**6.15**	**241**	**4.29**	**168**	**409**	**249**	**0**	**11/32**	**-11/76**	**2**

Figure 5 shows the 2016/2017 season production figures for 4-8 year old cows in the bottom 25% BW. Cows were herd tested 4 times

Difference

Top ¼ 464

Bottom ¼ 409

Difference 55kgms

X cows in bottom ¼ = 12

= 660kgms

x $6

= $3960

Total potential value missed from animals being in bottom 25% BW at a $6/kgms payout

= $6660

/2 to get sharemilkers %

$3330

all of these bottom 25% cows calved in the first 6 weeks in 2016

Half of these cows are due to calve to ab beef sires in 2017 (bottom 12%)

Potential heifers missed (on average)

12+9 = 21 cows

½ in calf to beef = 10

10/2 = 5 potential replacement heifers missed out.

9.2 Calculations 6 week in calf rate

How can the challenge benefit you? Use our benefits calculator to find out!

Your current 6 week in-calf rate	65	%
Your current not-in-calf rate	11	%
The size of your herd	270	
Your target 6 week in-calf rate	78	%
Your target not-in-calf rate	7	%

Potential profit from increasing 6 week in-calf rate	$14,040
Potential profit from decreasing not-in-calf rate	$10,800

Total potential increased profit

$24,840

9.3 Losses in BVD Infected herd

Cows take 2.35 days longer to conceive :

2.35 days x 1.5kgms/day x 6kgms x 270 cows = $5710.5

Cows produce 0.074kgms less per day

0.074kmgs x 260 days lact x $6 x 270 cows = $31168.8

On average 2.03% of cows will abort and be culled

2.03 % x 270 x r1 heifer value ($819) = $5085.99

On average 50% of PI cattle die before 2 years of age =

1.33% x 270 cows x 50% mortality x 1421 (r2 price) = $2551.4

Culling of PI cattle over 2 years of age

1.33% x 270 x 50% survival x 69% extra cull rate x 1649 = $2042.9

Total potential loss if BVD infected $46559.59

9.3 Calculations keeping replacements from naturally mated R2 animals

55 heifers at grazing

3 bulls leased @ $430/head plus gst

MT rate of 8%

=44 heifers

68% Waikato average 6 week in calf rate (source NZ dairy statistics)

Assume only keep calves in first 6 weeks

29.9

50% heifers

14.9

Including approx. 5% born dead, defects, etc.

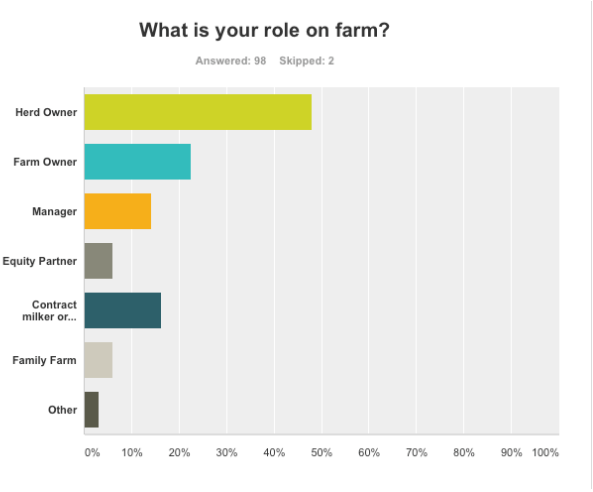
14 heifer calves

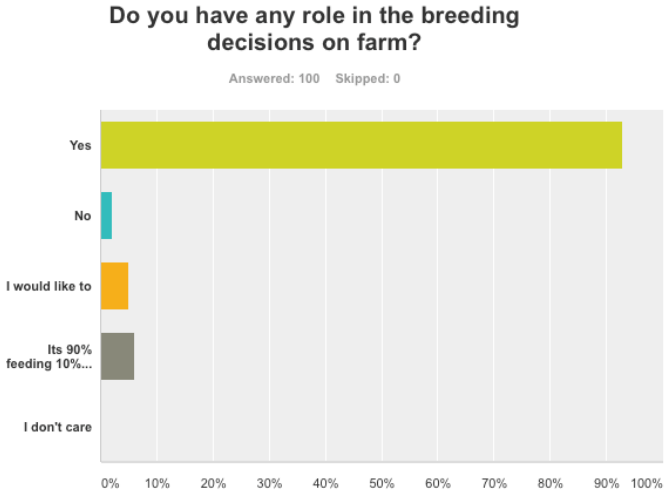
9.5 Survey Questions

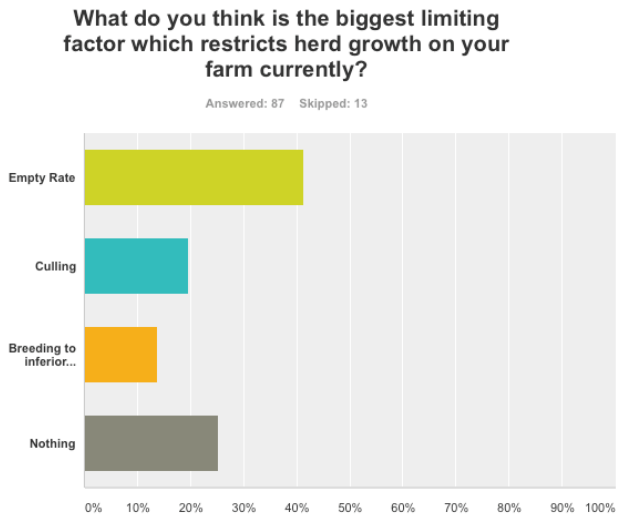
1. What is your role on farm?
2. Do you have any role in the breeding decisions on farm?
3. What do you think is the largest limiting factor which currently restricts your herd growth?
4. What do you believe is more important?
5. When if comes to mating what is (generally) your farm policy
6. What cows do you keep replacements from?
7. When you bought your herd, what did you buy?
8. Did BW affect your purchasing decision at all?
9. When you went 5050 (or when you go 5050/herd owning position) What do you think your herd had (or will have) that gave it the advantage over others applying for the job?

10. What strategies did (will) you employ when you were looking to grow your herd?

9.6 Survey Responses

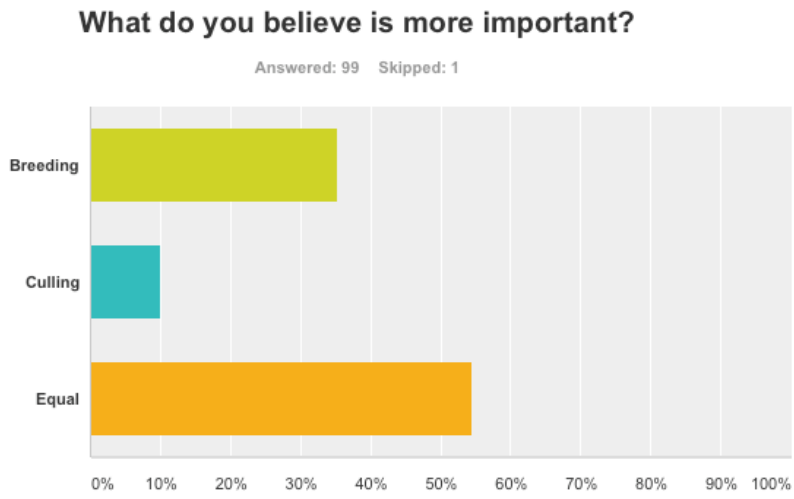






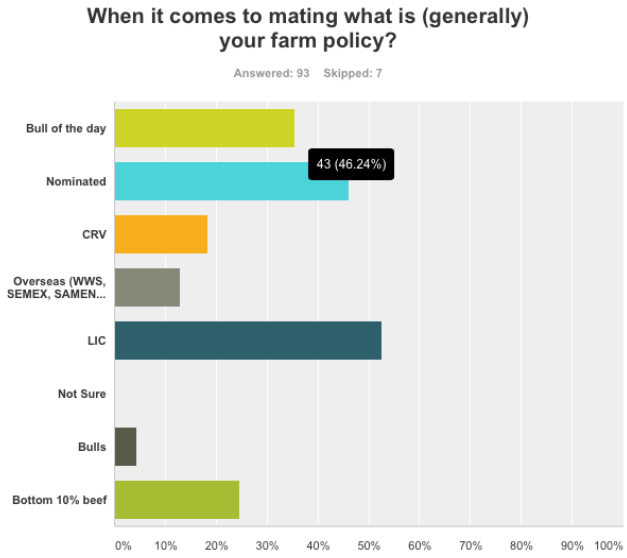
Survey Comments (Filtered for Clarity)

- Money (several respondents)
- Sharemilkers so farm owner determines stock on farm
- Empty rate has a big effect on culling
- Keeping all calves
- Calving period is far too spread out, calves take a long time to grow. Some of these cows are the best producers but don't cycle until later as they calve last.
- Empty rate affects it as it means we have less in calf cows to choose to cull based on other factors
- Longevity of Animals
- Climate
- Poor 6 week in calf rate
- Lack of heifer calves born
- Finances
- Getting under 20% replacements



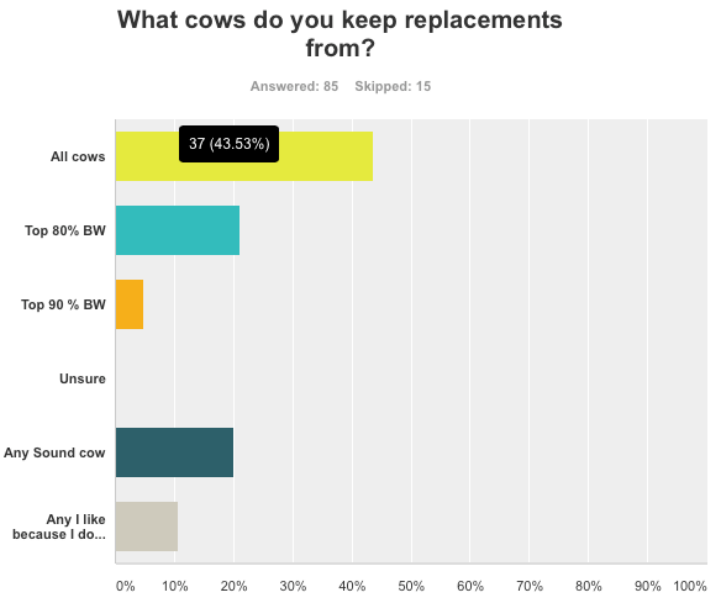
Survey Comments (Filtered for Clarity)

- Money
- Feeding
- We don't breed replacements from the lower end of our herd



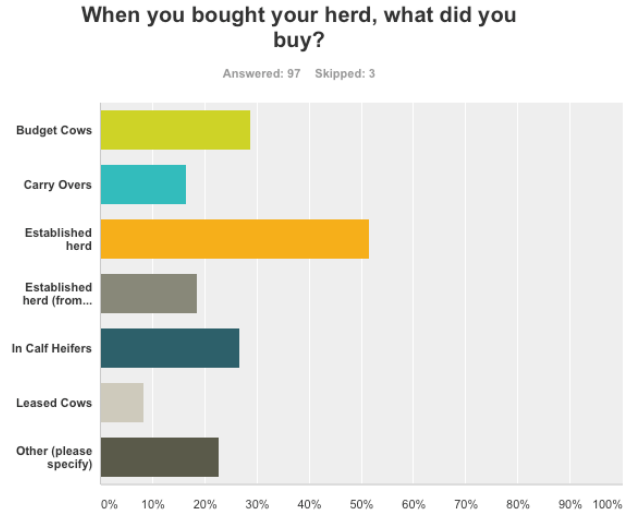
Survey Comments (Filtered for Clarity)

- Bottom 50% to beef
- Sire proving scheme (several respondents)
- Bull of the day but also purchased nominated
- Privately sourced genetics
- Look at PW, Udder and breed poorer cows to beef



Survey Comments (Filtered for Clarity)

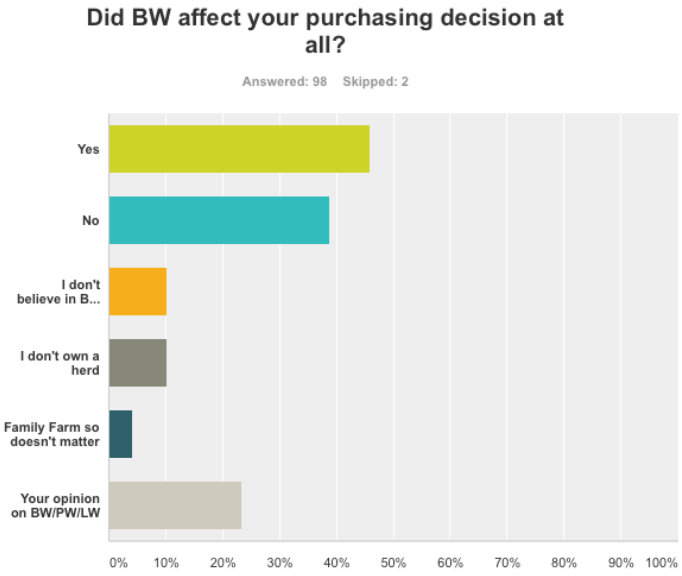
- The good cows
- Top 90% PW
- Only Breed from cows I want to keep calves from
- Top BW and PW cows
- Top 50% (several respondents)
- All cows that have AI heifer calves in first 4 weeks
- Keep all heifers



Survey Comments (Filtered for Clarity)

- Reared young stock and leased

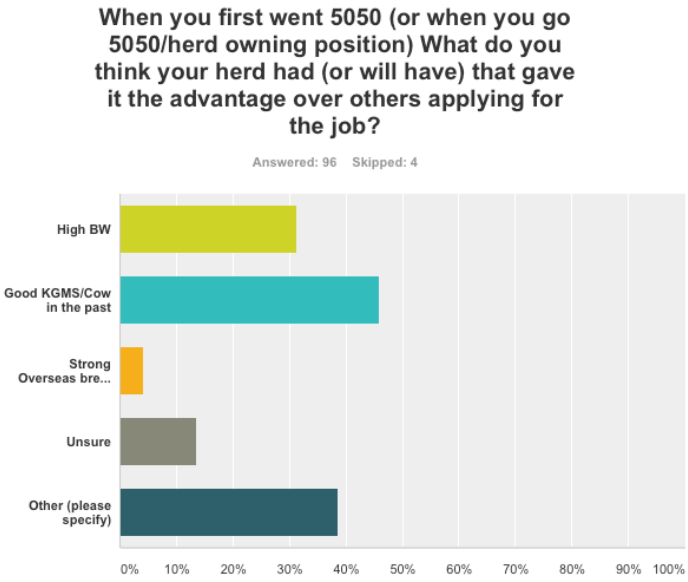
- R1 heifers
- Calves from several farms
- Mix of cows from everywhere
- High PW
- Cows from hill country
- Bought the best BW we could afford



Survey Comments (Filtered for Clarity)

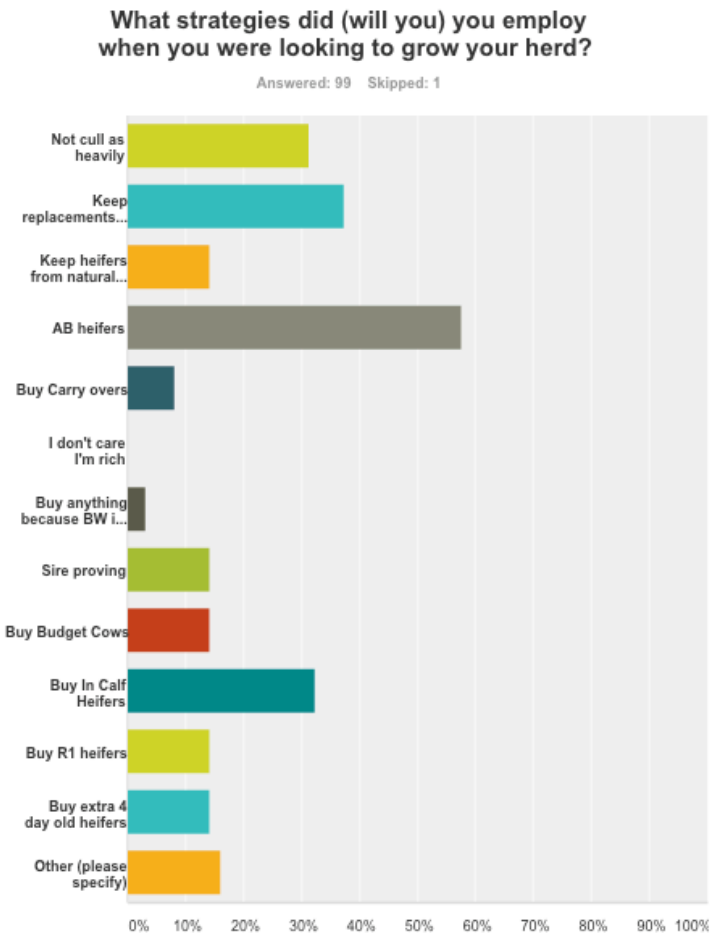
- With overseas genetics our BW dropped but we have a herd of good producing cows
- BW has its place as a reference point for animals in a NZ based farming system. I think a lot of people don't understand BW/PW and rubbish it, but if you know how it works you can do well and take advantage of it.
- Encourages small low producing cows
- BW has low reliability
- I don't believe in BW as we have pure breed Ayrshires. LW and cow soundness more important.
- PW before BW (several respondents)
- Depends on if we are buying heifers or cows whether it is BW or PW (and price)

- I think BW is a marketing technique
- Puts to much emphasis on small fat cows that don't produce milk
- Have found higher BW &PW animals are usually higher producers
- Political move by LIC
- Cheaper cows means less risk more room for improvement
- Definitely not the be all and end all as far as production is concerned but the value of a herd really seems to go up when BW does.



Survey Comments (Filtered for Clarity)

- Condition, temperament, age
- Our skills as farmers
- Purchased on farm herd (several respondents)
- Long established herd (several respondents)
- Condensed calving and reproductive rates
- A2 herd (several respondents)
- History with owner
- Family Farm
- Reputation
- Sound Cows



Survey Comments (Filtered for Clarity)

- Naturally increased over time. Didn't buy in any cows, culled a few less some years but with good empty rates we can cull and grow at the same time
- Lease cows
- Pay debt
- Get a second job
- Keep carry overs
- Lengthen AB Mating to 12 weeks
- Buy Empty cows and get them in calf to calve in Autumn and sell
- Buy old sound cows cheap that are in calf early. This gives me fertility and practically a free cow after a year.