

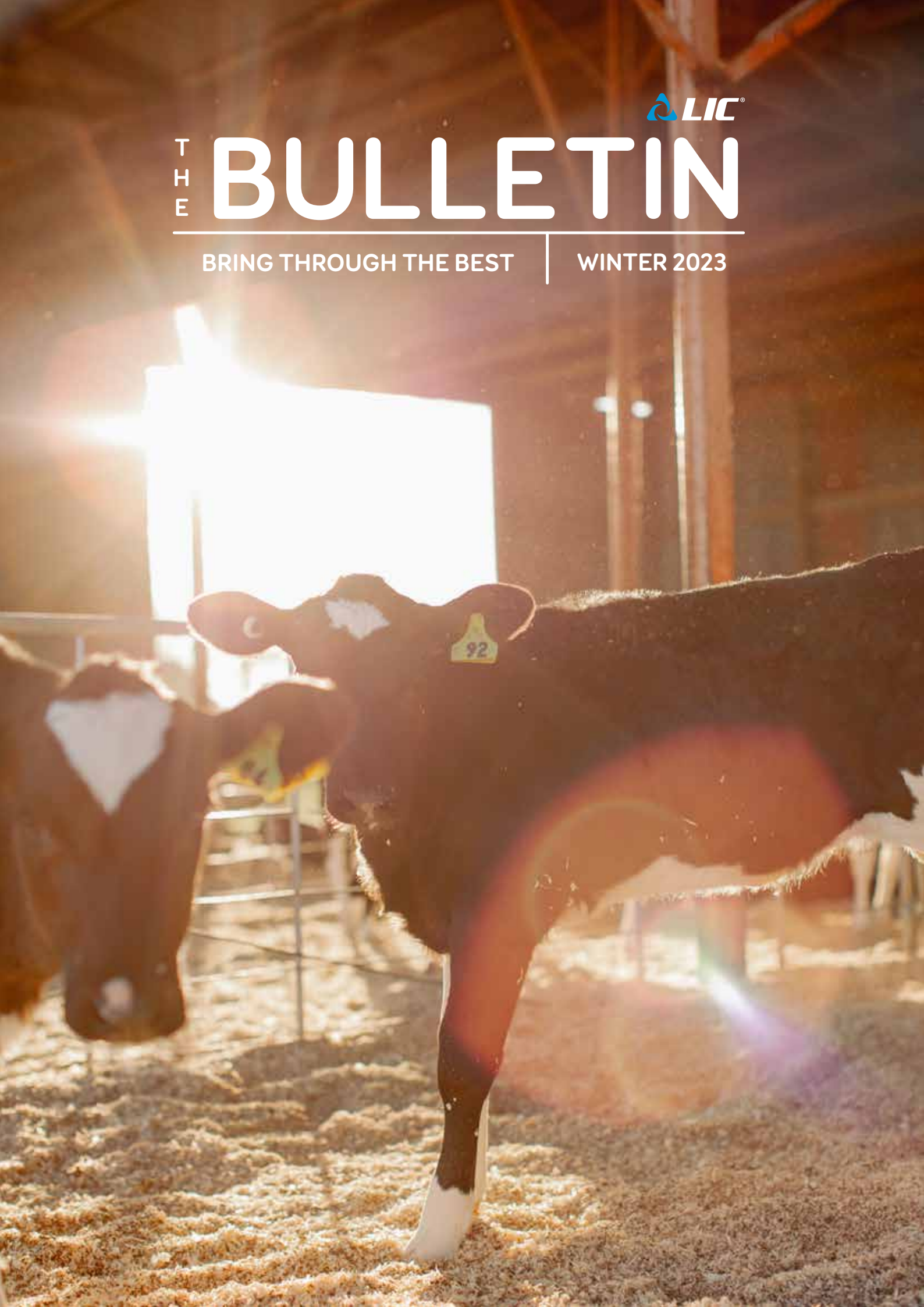


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BULLETIN

BRING THROUGH THE BEST

WINTER 2023





by Malcolm Ellis, LIC general manager NZ markets

'Cow is a cow' mentality is well behind us.

We've made it to the end of the 2022/23 season, memorable for a number of reasons and forgettable for others.

A challenging spring was served up for most regions, with really only Southland recording a spring worth writing home about.

For others the common observation was a balance date somewhere around 7-14 days late, and that certainly proved material.

For many the summer period was the wettest on record, and I know on our own farm fewer supplements were fed than I can ever remember in that 100-day period from 1 February.

The 'kind' summer was welcomed by most, but not so for those that endured a significant weather event and I am very well aware that a number of farming communities have faced the destruction and impact of multiple severe events.

To those farmers I have great sympathy, as they have faced the full force of mother nature.

As I stand back and ponder the closing of another dairy season and the curtains opening on the next, I am drawn to contemplate some of the biggest changes I have seen within the sector over the last decade, and more specifically the last 3-5 years.

The technology make-over stands out, as does the increased smart use of alternative milking regimes, but in my world the aspect of change that gives me most satisfaction is the increased awareness and appreciation of the value of Herd Improvement.

I'm delighted to have farmed through those 'cow growth' years, and I think of some of the opportunity that existed as the sector grew by more than 100,000 cows per year for 23 consecutive years.

The capital gain model was well oiled, and one cannot deny the fact that the 'cow is a cow' mentality was alive and well.

Roll forward to 2015 and the New Zealand cow population was peaking, and for the five-odd years that followed the sector came to grips with this reality of 'cow peak'.

What really encourages me is the period that followed, I am going to call it 2020-23 (and set to continue) where I am seeing a real appreciation of good cows.

The difference between good and average cows has been totally exposed, and of greatest pleasure is seeing the metric of the 'Rate of Genetic Gain' really starting to become embedded as a KPI on farm.

The opportunity to advance farm performance, profitability, and to secure required emissions reductions looks set to be wrapped up in the riches of the value of Herd Improvement.

All the best as the new season gets underway and we look forward to continuing to work with you to positively impact your business.

All the best,

Malcolm Ellis.

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On the Fast Track

A programme of consistent genetic gain, recording accuracy, and calf quality is the key to success on the Rogers' Taupiri Farm.

Here, LIC visits a Waikato farm that is among the top-echelon in recent genetic gain figures; the speed of improvement across the farm's replacement calves has more than doubled in the past decade.

Although many factors, including genetic gain, contribute to per-cow milk solid production from season-to-season, it's perhaps no coincidence that per-cow milk solid production in the herd has been on a similar upward trend (to that of genetic gain in the herd's replacement stock):

In the past decade Chris and Dianna Rogers' breeding plan has seen an average genomic breeding worth (gBW) gain of 24 points per year across their replacement calves, significantly higher than the

widely-heralded industry average gain of 10BW per year.

Even better, during the most-recent four-year period, the average year-on-year gain in each cohort of the Rogers' replacement stock has hit nearly 37gBW per year.

During the past few years, the Rogers have generally raised between 135 and 140 replacement calves (selling any that are surplus to requirements).

How have they done it?

"We've simply followed the principle to breed on gBW, and cull on PW (production worth)," Chris says. "It seems to be working well."

But he and Dianna, who manage the farm along with their son

Bennet, admit there's a little more to it.

"About 10 years back we had a meeting down at the Taupiri rugby club, and we had Malcolm Ellis (in a former role as part of the LIC sire selection team) present to us," Chris says. "We were actually doing a lot of what he was saying, but it resonated."

The recommendations served as reassurance the herd was on the right track, and gave the Rogers' the confidence they needed to ramp-up their strategy of continuing on their genetic gain path by concentrating on the quality of their replacements.

That centred on the mantra of farmers mating their best cows to the best-available sires, and retaining the best replacement stock to bring through to the milking platform: "It sounds simple but it's not really as easy as you might think," Chris says.

For a start, you've got to have accurate records, the family says.

"So you need to know who is performing, and I can only confidently get that from herd testing," Chris says. "If my herd testing is accurate, I know exactly who to breed from, and I know exactly which ones to cull."

During calving and post-calving, the Rogers also need to know which calf belongs to which cow, and that was only known, for certain, through parentage testing.

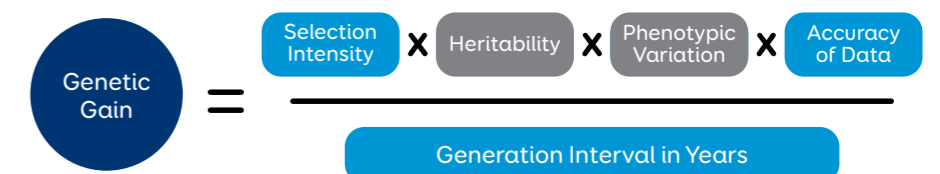
Until last year, the Rogers used sire and dam information (parent average) as their best indication in determining which replacement heifers to bring through to the milking platform (as opposed to which excess replacements to sell).

The next step, however, has been the Rogers' adoption of LIC's Genomic Evaluation Report, and the Rogers are interested to see whether this will add further momentum in their drive for faster genetic gain in the herd.

The service provides more accurate estimations of breeding values across all traits, based on the young animal's own DNA information. This enables for improved selection of young stock before they receive information of their own (i.e. such as herd test data).

"I'm putting a lot of faith in that (genomic service)," Chris says.

continued p.4



The Breeders' Equation:

Highlighted in light-blue are factors the farmer has the most influence over.



“Rapidly increasing a herd’s rate of genetic gain is heralded as key to maintaining both profitability and on-farm production, while improving the farm’s environmental footprint”.

Dianna says the farm also undertakes matings on the herd’s top yearlings.

This strategy works on the principle that faster genetic gain can be achieved by cutting down on the generation interval (see graphic pg. 3 - The Breeders’ Equation): “That also took us to another level,” Dianna says.

Yearlings are mated to a mix of fresh and frozen sexed semen, with the yearling matings starting ahead of the herd’s planned start of mating.

“If you’ve got a good cow, I believe you’ve got to do your utmost to get a heifer out of her,” Chris says. “I’ll extend my mating just to do that, even if she’s going to be a late-calver.”

The top-60% of the herd goes to Premier Sires Forward Pack, with 2-3 straws of fresh Sexed Semen

per day going to the best cows for a total of three weeks. Some nominated bull semen is also utilised for top cows. “This usually gives us surplus heifers that we rear, then we pick which ones to be retained” Dianna says.

The balance of the herd goes to SGL Hereford.

“The genomic bulls are a lot more-reliable today,” Chris adds, and, mixed-in with Daughter Proven bulls, the necessary team reliability is provided for within the Forward Pack offering.

Chris says he perseveres with his artificial breeding programme, at times extending it through until Christmas for the spring calvers, and from 1 June to mid-July for the autumn calvers. “It’s a long-time to be doing AI, but I don’t mind it.”

The couple’s Taupiri farm milks about 530 cows and is a once-a-

day, split calving, operation. The crossbred cows are milked through a 48-aside herringbone dairy. Chris and Dianna say they want to manage stock numbers down to about 500 in the near future.

The Rogers make careful in-shed assessments of heats, but regular in-paddock observations of yearling and cow behaviour (for signs of heat) are also recorded during mating.

The family is grateful for the advice they’ve received from their current LIC agri manager Tamara Finlay, and their former LIC representative Ross Wrenn, together with “outstanding” LIC AB technicians that have worked on the farm - Libby Soper and Bill Leanard.

In a Nutshell:

530 crossbred cows

Split calving, once-a-day herd

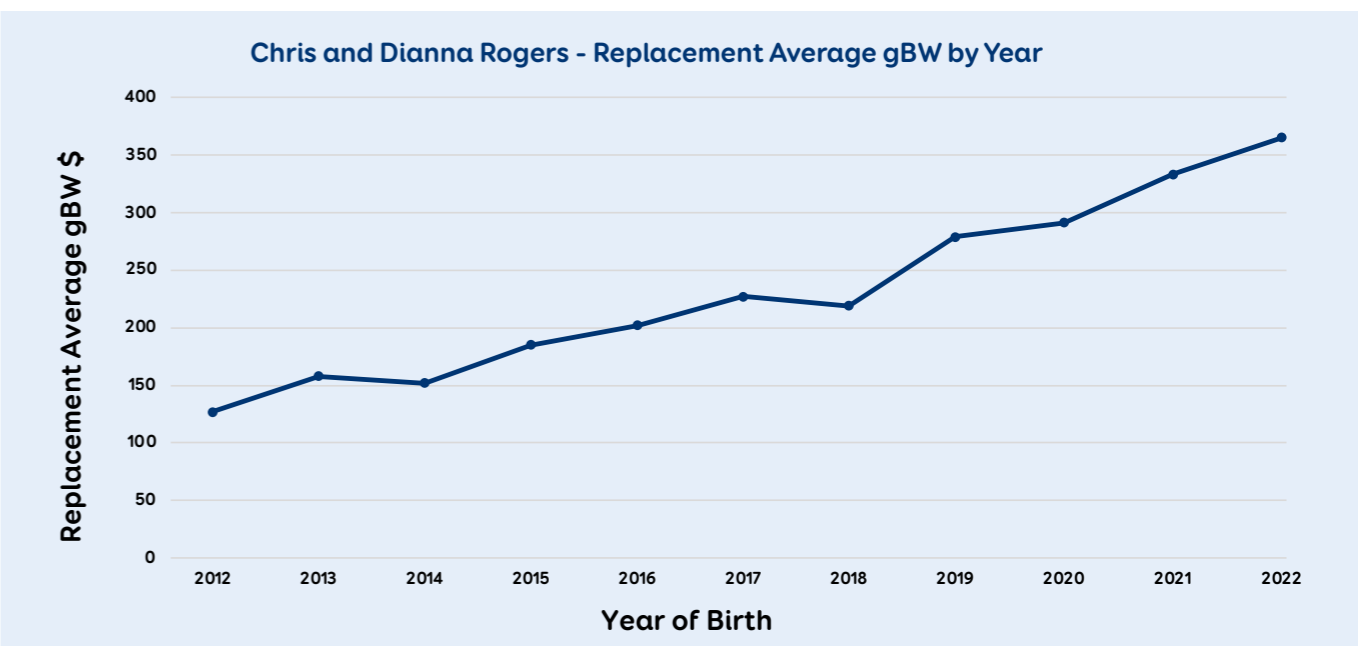
140 (approximately) replacement stock per year

Herd Test four times a year

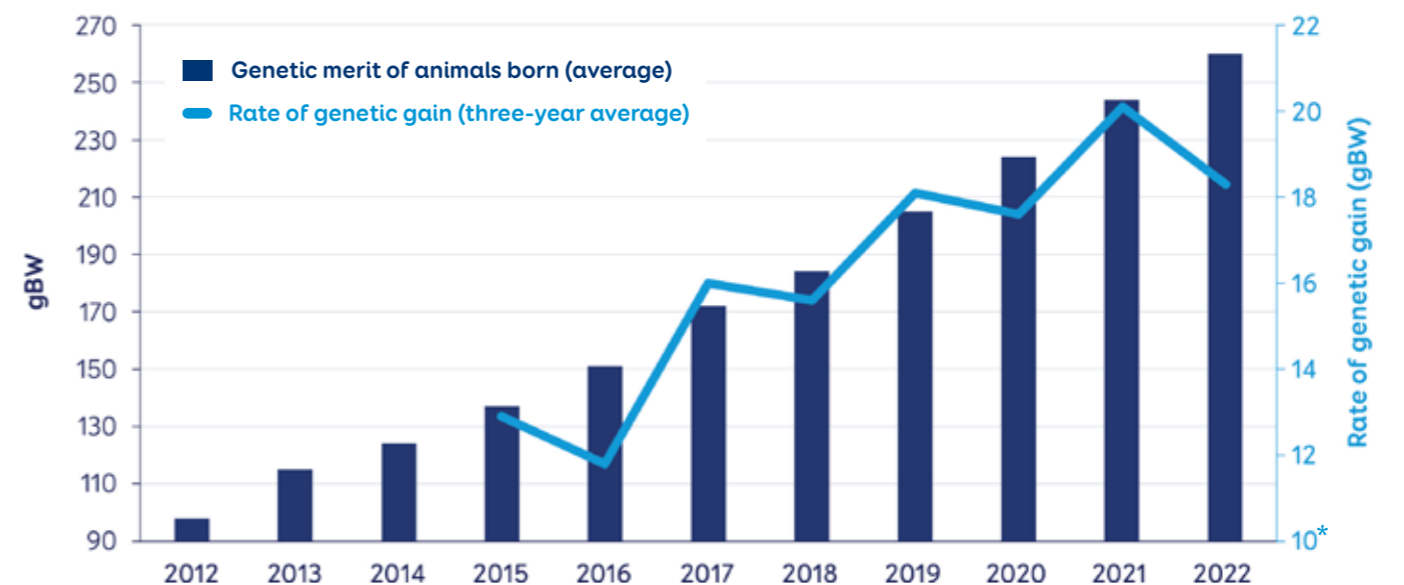
GeneMark Whole Herd Parentage (100% of herd parentage verified)

AB for 10 weeks in Spring, and six weeks in Autumn:

- Sexed Semen and Nominated Semen to yearlings and heifers in the week prior to mating start date.
- Sexed Semen (fresh), 2-3 straws per day for three weeks.
- Forward Pack to top 60% of herd based on BW.
- SGL Hereford to bottom 40% of the herd.
- Selective culling on PW and SCC.
- Genomic Evaluation Service to identify top replacement calves for retention.



Annual Genetic Gain Rate in LIC Herds Since 2012



*Traditionally-acknowledged average rate of genetic gain in New Zealand’s national dairy herd.

WE WANT IT ALL: Calving and First-Milker Observations

Your Yellow Notebook could contain information that's 'industry gold' - but whether this gets transferred to MINDA is another issue!

Over the long-term, there's one sure-fire way to make for easier, stress-free, calvings - and that's by writing down all calving difficulty information in the Yellow Notebook this season, and ensuring it gets transferred to MINDA (alternatively, farmers are increasingly recording information direct to the MINDA App).

Jen Campbell, LIC genetics business manager, says farmer observations of calving difficulties and identifiable calf defects, is "like gold" to the breeding industry. The on farm observations are critical and the data invaluable.

Jen says breakthroughs by the cooperative's scientists, thanks to initial on-farm observations, included discovery of the gene responsible for Small Calf Syndrome.

Small Calf Syndrome could now be managed within the national herd via breeding, with LIC's sire selection team avoiding purchase of bull calves that carry the unwanted genes.

Jen says alerts can also be loaded in the AB Technician's DataMate (a digital device that records matings), so undesirable genetic matches, between specific bulls and cows, can be avoided; this is what occurs with fertility variations



(Fertility 1, 2, 3, and 4).

But the recording of calving events, specifically difficulties, are just as critical as observations of unusual phenotypes, Jen says.

"Changing social licence to operate and regulatory compliance means there's an

CALVING EASE - WHAT DO YOU THINK?

increased expectation on farmers and dairy suppliers to report on the fate of calves born on-farm, and calving difficulties is something that's closely related to this," she says

"While it's acknowledged how busy calving can be, and how challenging weather often is at the time, both pieces of information just take a few seconds to jot-down or record, but it's going to help everyone in the industry long-term."

Calving difficulty associated with yearling bulls is especially important, Jen says, because this provides early information related to the bull's continued use across the industry.

SPS farmers record calving difficulties as part of their contract

with LIC, and this means most sires receive a few hundred observations.

"When our genetics teams put together solutions like easy-calving bulls, we're doing so based only on the information we've got... identifying sires that have harder calvings is crucial because farmers

- IS IT GETTING BETTER?...
- IS IT THE SAME AS 10 YEARS AGO?...
- OR IS IT WORSE?

don't want to be buying semen and using it across the wrong animals only to find it makes for difficult calvings."

Calving outcomes are held in MINDA, and are categorised as:

- i. not recorded;
- ii. no assistance;
- iii. some assistance;
- iv. major assistance (vet help required).

Events like still-births and abortions get identified through different channels within MINDA, and these are recorded via the LIC website using the calf defect form, <https://www.lic.co.nz/contact-lic/calf-defect-form/>



by Simon Worth,
LIC livestock selection manager

One of the highlights of the year for LIC's breeding team is the recent rounds of on-farm inspections of potential bull dams throughout the country, closely followed by last month's hosting of our breeders (who had a bull included in one or more of the 2022 Premier Sires teams) in Hamilton.

Breeders are the 'engine room' of the AB industry, so LIC's Breeders' Day is an event our team truly enjoys, and it represents an opportunity to show our appreciation to the industry players who contribute so much.

It's rewarding to see LIC's *Genetics Catalogue 2023* come together and, for us, this sits prominently in the office.

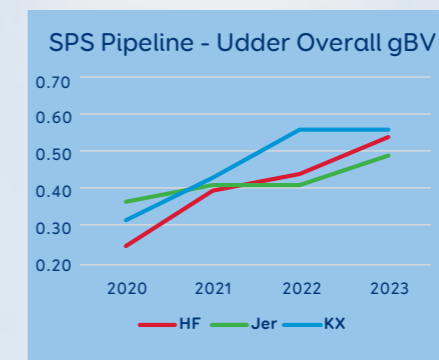
The focus on genomic breeding worth is very apparent, but it's encouraging to see exceptional depth and options across, and within, the breeds. Of particular note is the level of udder conformation LIC has available. On review, the average of the udder overall genomic breeding values (gBVs) of bulls available in this year's catalogue is impressive.

Average Udder Overall gBV of Bulls

	HF	Jer	KX
Genomic	0.71	0.61	0.75
Daughter Proven	0.73	0.50	0.68

From the Breeding Desk

There's more to come in this space. The 'pipeline' is the description we give to those bulls yet to receive a daughter proof. The best of these emerging bulls will be selected for various teams, however, across the entire pipeline (and across 180 bulls per year), the trend we're seeing in the udder gBV is also very encouraging.



The gains we've made over time are a consequence of a deliberate focus on the traits that farmers want.

Clearly this is heavily influenced by the national breeding objective set by Dairy NZ (BW), but LIC's breeding team has always placed additional emphasis on specific traits, such as fertility and udders. This is reflected in LIC's internal index that we utilise for breeding decisions, the Livestock Selection Index (LSI).

Although LSI has put us in good stead, we're eager to understand if this is still 'fit for purpose'. On this note, over the middle of this year, we'll be embarking on an extensive series of farmer meetings, and other forums, to understand:

- What are the farming systems of the future?
- As a result, what is the cow of the future?

Clearly the answer to these questions will differ from location to location. However, we want to understand the changing landscape, especially because breeding is a long game.

The findings from this project will be utilised to help us shape the future make-up of our LSI.

I hope you enjoy the next few pages as the team takes you through some individual highlights. I'm sure you'll agree that in 2023 there's an abundance of options across the breeds. There's no doubt that a good number of these bulls are set to make a significant impact on the national herd.

As I did last year, I'd like to share my appreciation and recognise the excellent relationships we have with the breed associations. These have culminated in a number of joint venture bulls making the grade through either the Discovery Project (Holstein Friesian New Zealand) or Jersey Future (Jersey New Zealand).

All the very best for the months ahead. From the breeding desk, we look forward to spring where we will witness the emergence of the new graduates (20 code bulls).

I'm again confident a celebration will be in order!



Marieta, the dam of Monopoll

by Michele Van der Aa,
LIC livestock sire analyst

A Dam Fine Time of the Year

Dam inspections are always a rewarding time of year.

Not only do I get to travel to beautiful parts of the country in search of stunning cows, but it's valuable to spend time re-engaging with some of the industry's elite farmers and breeders.

For me this represents an opportunity to check-in to ensure that both parties are seeking the same breeding outcomes – these experiences continue to drive my passion for the sire analyst role.

On numerous occasions I'm 'wowed' by daughters of the recent graduate bulls, and I can see the best is yet to come.

Browsing the genomic Holstein-Friesian bulls in this year's *LIC Genetics Catalogue*, it became immediately clear I was going

to have a challenge on my hands: when there are so many extraordinary bulls available, how do you narrow it down to just a handful to profile!?

What we've been working towards is now coming to fruition; 0.80 udders (genomic breeding value, gBV) are the old 0.45s, and production continues to increase, as does efficiency.

And it's truly thrilling to see we can now offer farmers polled sires which deserve to be in the catalogue on merit alone, not just because they are polled.

This is merely a sample of what we're capable of delivering and we will continue to strive for more within our Holstein Friesian offering. With that being said, it gives me great pleasure to showcase the following bulls.

122013 Dicksons AR Monopoll-ET-P S2F:

Murray and Julie Dickson have done it again!

Hailing from the illustrious Margy family, Monopoll is a heterozygous polled sire available in *LIC's Genetics Catalogue 2023*.

Bred from Marieta, who has a production worth (PW) of greater than 600, and scoring well for her type traits, this Arrow son is sure to leave daughters on the ground that will be well liked by farmers.

Efficiency is strong here with close to 80kg (gBV) of combined fat and protein coming through in a compact liveweight, with positive fertility in tow. Supported by a commendable 0.71 udder overall gBV and A2A2 status, Monopoll has a 410gBW, and can be used across yearling animals.



122080 Wittenham CP Pollman-P S1F:

Looking for the complete package? Then look no further than Pollman.

At a competitive 434gBW this heterozygous polled son provides a 50:50 chance of the progeny being polled. Sired by Polish, who was polled himself, Pollman brings to the table 87kgs of fat and protein (gBV), with a 60kg liveweight genomic breeding value (gBV). Further, he's both positive for fertility and A2A2.

His dam is sired by Mastermind so you can be reassured type traits have not been compromised.

Bred by Shaun and Anna Baxter in the Manawatū, this bull is a real testament to their breeding strategies.



122080 Wittenham CP Pollman-P S1F

122022 Mattajude MA Magnificent S3F:

One of the highly anticipated Arena sons coming through the pipeline, Magni cent oozes production. Boasting 51kg (gBV) of fat and 53kg (gBV) of protein, Magni cent is sure to breed tidy, milky daughters.

A well-balanced sire, the production is carried by an exciting 0.81 udder overall gBV, a strong reflection of both Magni cent's stunning dam and Arena's exceptional type gBVs.

It's exciting to see Magni cent score so highly throughout his farmer opinion traits. Matthew and Judy Brady of Taranaki should feel extremely proud of what they've delivered here.



122022 Mattajude MA Magnificent S3F

122093 Tronnoco AR Sadio-ET S3F:

Tony and Keri O'Connor from Timaru continue to deliver stellar bulls and Sadio is no exception.

From a proven cow family, Sadio is fortunate to have the highly-respected Sunita as his grandam.

The maternal line has three generations of VG dams and this is reflected in Sadio's 0.96 udder overall gBV. In addition, this Arena/Maxima combination has admirable production gBVs with more than 108kgs of fat and protein coming via 1680 litres, with a 75kg liveweight gBV.

To ensure little is compromised, Sadio has a fertility gBV of 2.5.



122093 Tronnoco AR Sadio-ET S3F



by Danie Swart,
LIC bull acquisition manager

THE EFFICIENT JERSEY COW AND BULL PROFILES

Cow efficiency is without doubt at the forefront of farm conversations worldwide.

In New Zealand, where climate change and environmental regulation has contributed to dairy cow numbers stabilising, (ahead of a likely decline over the next 10 years), the need now is to milk more-efficient cows and to get maximum performance from the herd. In other words, producing maximum milksolids per kilo of dry matter, and per kilo of liveweight, is the focus for many.

Jersey cows are aligned to the objectives above, and it continues to be a breed that punches above its weight. Combined with a good reputation for fertility breeding values, the breed has an increasingly important role to play in the national herd.

The adjacent graph illustrates the increase in efficiency of the SPS Jersey bulls over the past 10 years.

After listening to farmer feedback, LIC focused on increasing the liveweight breeding values of Jersey bulls and this is a trait that has increased significantly over time.

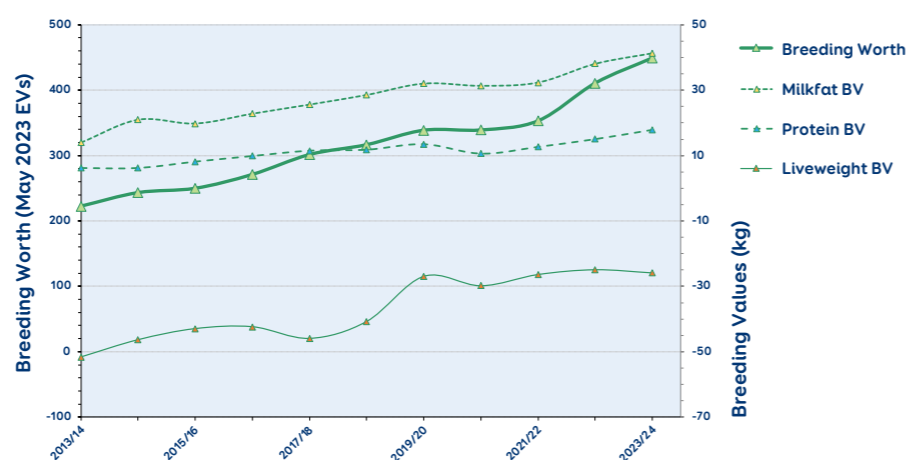
Following on from this, production increased rapidly, with a big strides being made in fat and protein breeding values.



Dam of 322036 Glanton KFP Bremen-ET

Sire Proving Scheme Genetic Trends (10 March 2023)

Jersey



The table (p.11) illustrates the genetic gain and efficiency of the SPS intake of Jersey bulls purchased over the past three years (for some key traits that influence efficiency).

Note there are significant improvements in gBW and milksolids, which goes hand-in-hand with good-sized Jerseys.



322001 Paynes Titus Excelsior-ET

AB-code Year	gBW	Fat gBV	Protein gBV	Liveweight gBV	Fertility gBV	Udd O'all gBV
2021	351	32	13	-25	0.6	0.49
2022	408	36	15	-23	3.0	0.51
2023	445	41	18	-27	4.3	0.60

Included in the table are fertility and udder overall (two traits that are high genetic priorities for dairy farmers).

This year LIC has slightly reduced the annual SPS Jersey bull intake, although it has increased the joint Jersey Future programme (with Jersey NZ) to nine bulls for 2023.

LIC genetics experts are focusing on diversity, along with continuing non-negotiables of genetic gain and quality dairy traits and breeding values.

While we're on the subject of efficiency and elite quality, it gives me great pleasure to profile three bulls that excel in both production and traits-other-than-production (TOP).

322205 Lynbrook Trigg Bravado: Bravado is from the Lynbrook Stud and is a Jersey Future bull (a result of LIC's joint programme with JerseyNZ).

Good production and great udders are a standout for this bull. His sire, Thornwood Degree Trigger, was one of the highest udder overall gBV Jersey bulls marketed by LIC.

Bravado himself has an udder overall gBV of 1.00, and a rear udder gBV of 1.17.

He's out of the Bowie cow family at Lynbrook, and his dam, Lynbrook Star Bowie, is a stunning VG86 cow with PWs and LWs in excess of 600.

This is indeed a great production and udder bull, and he's available in Premier Sires Forward Pack and sits in the Jersey Genomic section of LIC's Genetics Catalogue 2023.

322001 Paynes Titus Excelsior-ET: Excelsior is the highest-ranked 22-code bull in LIC's Jersey stable. Bred by Brad & Clare Payne, he's a bull with exceptionally high protein and fat genomic breeding values (gBV's), and a great fertility gBV of 7.0.

High production and fertility, combined with good somatics and udder gBV's, makes this bull a true all-rounder.

His dam is a standout cow with excellent milksolid production and a production worth (PW) of greater than 900. Excelsior is available in the Premier Sires Sexed team and as an Alpha nominated sire.



Dam of 322205 Lynbrook Trigg Bravado

322036 Glanton KFP Bremen-ET: From the Glanton stud and the well proven B-family, Bremen excels in production gBV's, and boasts a desirable liveweight gBV.

He's a bull that's likely to pass on big capacity to his daughters, as well as good rear udders.

Bremen is a half-brother of the high ranking Glanton Flynn Brisbane, and is out of the high production dam Glanton Index Brisbane - a cow with tremendous fat and protein gBV's.

Bremen is available in Premier Sires Forward Pack and can be nominated via Alpha.



by Adrian Young,
LIC bull senior sire analyst

BLACK MAGIC

LIC's KiwiCross team of bulls again offers all the traits and genomically-selected breeding values farmers could possibly wish for in their herd.

With the average genomic breeding worth (gBW) of Crossbred cows in the country sitting at 173, and the vast majority of KiwiCross bulls in the *LIC Genetic Catalogue 2023* sitting at more than 450gBW, there are plenty of gains to be made using LIC's best.

It's not only about the individuals. Utilising bull teams provides great opportunities; below is an overview of the potential Premier Sires teams available this year.

Forward Pack: With a breed-split of F9J7, a mixture of the best daughter proven and genomically selected sires is easily accessed.

With an udder overall gBV average of 0.57 and capacity gBV of 0.62, plenty of gains can be made utilising this team.

Daughter Proven: Also with a breed make-up of F9J7, this team is full of some of the best daughter proven bulls used in recent years, such as Speakes Slipstream and Gordons Flash-Gordon. Massive average capacity in this team is offered (gBV 0.66), complemented by an udder overall gBV of 0.64. With the insurance of higher reliability, these bulls will fit into many tried-and-true breeding plans.

Sexed Semen Team: An excellent average gBW of 455, this team exclusively features genomic sires which immediately reduces the generation interval, a critical component of fast genetic gain. With a breed split of F8J8, this team provides nice balance to any farmer seeking the best of both worlds.

There is a plethora of quality of bulls in the nominated space this mating season. Below, I'm profiling just four of them, but I could genuinely pick from at least 10! It's a certainty, however, that whatever your farm topography, whatever your soil type, whatever your location, whatever your farm system, there's something for any style farming in LIC's Alpha stable.

Forward Pack:	
gBW/Rel %	\$441/99
Milkfat	49 kgs
Protein	33 kgs
Milk	302 Litres
Liveweight	17 kgs
Functional Survival	3.1%
Milkfat %	5.5%
Protein %	4.2%
Heifer Calving Dif BV	0.1%
Cow Calving Dif BV	-0.4%
Fertility	3.0%
SCC	-0.08
BCS	0.12

Daughter Proven:	
gBW/Rel%	\$384/99
Milkfat	42 kgs
Protein	30 kgs
Milk	365 Litres
Liveweight	9 kgs
Functional Survival	3.2%
Milkfat %	5.3%
Protein %	4.1%
Heifer Calving Dif	0.5%
Cow Calving Dif	-0.2%
Fertility	1.2%
SCC	-0.06
BCS	0.12

Sexed Semen Team:	
gBW/Rel %	\$455/97
Milkfat	49 kgs
Protein	32 kgs
Milk	235 Litres
Liveweight	18 kgs
Functional Survival	3.5%
Milkfat %	5.5%
Protein %	4.3%
Heifer Calving Dif	0.3%
Cow Calving Dif	-0.3%
Fertility	4.2%
SCC	-0.10
BCS	0.16

NB: the reliability of a team of bulls is always higher than using just one bull.
Date 19/05/2023



NB: the reliability of a team of bulls is always higher than using just one bull.
Date 19/05/2023



NB: the reliability of a team of bulls is always higher than using just one bull.
Date 19/05/2023



A half-sister of Tu-Mekes Dam



522051 Lake Downs Resolution-ET



521072 Baldrick Spectacular



522071 Burgess Princeton-ET

522050 Julian Tu-Meke: For anyone uninitiated in Maori, Tu-Meke translates to 'Stand Up' or 'Too Much', depending on context. Either way, this sire certainly fits the bill.

Another cracking bull from the Atiamuri postcode, he's available in conventional frozen (Alpha) and Sexed Frozen, and he's also a member of the Premier Sires Forward Pack team. Tu-Meke is another Honenui son from a Glen-Koru Proclaimer dam.

522051 Lake Downs Resolution-ET: Here's an F8J8 Speakes Slipstream son from a really nice Greenwell Blackhawk daughter. Resolution is bound to tick a lot of boxes for a range of New Zealand conditions. Boasting the highest udder gBV of the KiwiCross bulls marketed this year at 1.18, he offers 5.9% fertility. Resolution is the result of some great work by Wendy and Keith Lambeth in Atiamuri. The couple run a straight-commercial dairy herd, which mean this bull's back-pedigree and cow family has rightfully earned its place, and it's a fair bet he'll provide great offspring to farmers throughout the country.

521072 Baldrick Spectacular: A Flash-Gordon son from the Rai Valley stud of Baldrick and Charlotte O'Donnell, this guy hails from a really nice Beamer dam. In Spectacular's maternal line there are three generations of cows that boast more than 500 Production Worth (PW). To illustrate his genomic figures are not without substance, some of the highlights in his gBVs include 4.3% fertility and a fat gBV of 51kgs, together with an udder overall gBV of 0.94. His breed split is F10J6.

Spectacular is available in the Premier Sires Sexed Team. He can also be purchased in Sexed Frozen and is of course available in conventional frozen.

522071 Burgess Princeton-ET: Princeton is another exciting young sire bred in Matamata by Michelle and Bill Burgess. He's bred from Burgess My Pandora who is a beautiful Arkans Bounty daughter that's been milking really well at Burgess farm (with a massive PW of 939!).

Princeton is a Dowsons Honenui son with an udder gBV of 1.09. With a breed split of F5J11, he

offers a respectable combined fat and protein (gBV) of 65 kgs (20kg protein and 45kg fat).

A Speakes Slipstream son, Princeton's half-brother Plato also features in the Forward Pack; with these half-brothers featuring in both the catalogue and Premier Sires teams, this further-endorses the ongoing belief that LIC's breeding team has in strong cow families, which serves to back up the team's trust in genomic evaluations.

During my time on the road conducting Dam inspections, it was an absolute pleasure to see some fantastic cows, and get the chance to meet breeders on their respective farms.

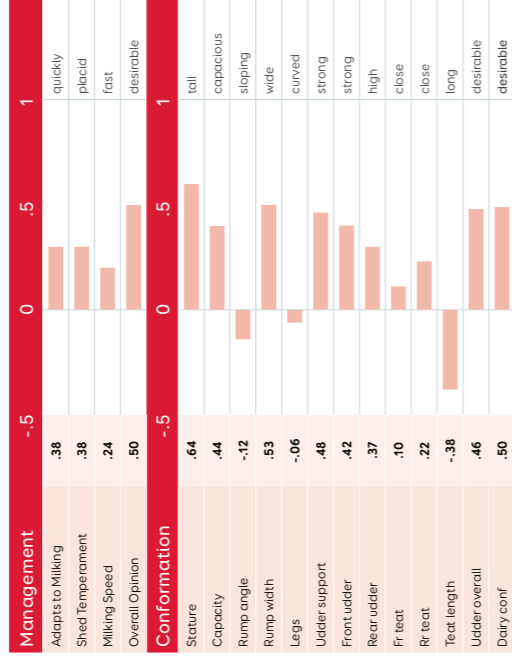
I trust all your spring calving herds got nicely dried off recently, and that you (and they!) have a well-earned rest over the coming weeks.

Also, all the best to autumn calvers, and I wish you all the best in setting yourself up for a prosperous mating period.

Potential 2023 Spring Holstein-Friesian Forward Pack Team

Sire	Sire
119002 BELLAMYS DM GALANT-ET SIF	122080 WITTENHAM CP POLLMAN-P SIF
119014 BUELIN BM EQUATOR S2F	122013 DICKSONS AR MONOPOLLE-ET P S2F
119041 ROYSON MG CURRENCY S3F	122072 WAITARIA FINN TAIN-ET SIF
119033 LIGHTBURN FREE RANGE-ET	122025 TAUNTS ALLOY HARWILL SIF
119079 BUSYBROOK DEALER-ET S2F	122005 BERRYS MB HUMBLE S2F
119034 TAFTS RHD OFFICER-ET S2F	122053 BUSYBROOK BE IMPLY-ET S2F
122015 TANGLEWOOD MF STORM S1F	122034 BUELIN MB BLAST-OFF SIF
122049 LIGHTBURN SAQ GASOLINE-ET	122011 DICKSONS GUSTO MR-RIGHT-ET S2F
122016 TANGLEWOOD MS WAVE SIF	122048 LIGHTBURN MS MEMPHIS-ET S2F

WEIGHTED AVERAGES OF PREMIER SIRE[®]



HOOFPRINT[®]



HOOFPRINT[®]



gBW/Rel %	\$406/98
Milkfat	53 kgs
Protein	39 kgs
Milk	682 Litres
Liveweight	56 kgs
Functional Survival	3.2%
Milkfat %	5.1%
Protein %	4.0%
Heifer Calving Dif	2.7%
Cow Calving Dif	0.7%
Fertility	3.6%
SCC	-0.11
BCS	0.15

NB: the reliability of a team of bulls is always higher than using just one bull.
 Shaded bulls include daughter information.
 Date 19/05/2023

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Date 19/05/2023

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Shaded bulls include daughter information.



Date 19/05/2023

Potential 2023 Spring Holstein-Friesian Daughter Proven Team

Sire	Sire
119002 BELLAMYS DM GALANT-ET SIF	119039 GREENWELL AB BRAZE-ET S2F
119014 BUELIN BM EQUATOR S2F	119034 TAFTS RHD OFFICER-ET S2F
119041 ROYSON MG CURRENCY S3F	115107 LIGHTBURN BLADE GUSTO
119033 LIGHTBURN FREE RANGE-ET	119015 BUELIN MG GLACIER
119079 BUSYBROOK DEALER-ET S2F	119025 WOODCOTE MG MACHO MAN-ET
119035 TAFTS RHD ORDAINS S3F	118061 HALLVILLE AS COLA S2F

WEIGHTED AVERAGES OF PREMIER SIRE[®]



HOOFPRINT[®]



HOOFPRINT[®]



gBW/Rel %	\$361/99
Milkfat	51 kgs
Protein	46 kgs
Milk	1006 Litres
Liveweight	78 kgs
Functional Survival	2.6%
Milkfat %	4.8%
Protein %	3.9%
Heifer Calving Dif	2.2%
Cow Calving Dif	0.8%
Fertility	0.7%
SCC	-0.05
BCS	0.19

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Shaded bulls include daughter information.



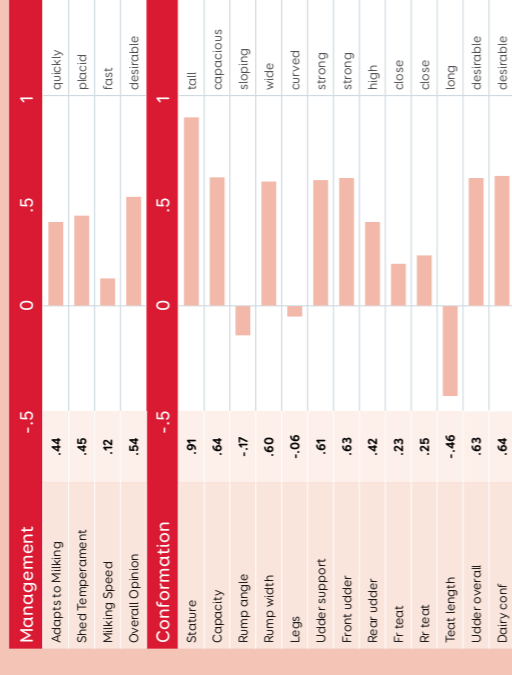
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Potential 2023 Spring Holstein-Friesian Sexed Team

Sire	Sire
122018 SHARPE BE SHOOTER-ET S2F	122053 MEANDER GALANT AVENGER-ET SIF
122056 MAH-FINN SAGE-ET SIF	122073 SHARPE ARENA SHORTLIST-ET S2F
122082 DICKSONS FINN NIOHAWK-ET SIF	122046 BELLAMYS RS GADSBY-ET SIF
122082 MILL-RIDGE MF GENTLEMAN-ET SIF	122050 MEANDER MB ADVENTURE S2F
121071 DICKSONS RS MAESTRO SIF	122086 BALDRICKS PW HARRY SIF
122029 MAHAREE FINN TONIC-ET SIF	121082 LIGHTBURN FREER GROOVE
122044 MEANDER FINN ALASKA-ET SIF	121017 MCERLEAN LF WISEMAN S3F
122078 OAKLINE PW KRAKA SIF	122041 MAKKERS MONEYMOON S2F

WEIGHTED AVERAGES OF PREMIER SIRE[®]



HOOFPRINT[®]



HOOFPRINT[®]



gBW/Rel %	\$384/97
Milkfat	50 kgs
Protein	37 kgs
Milk	662 Litres
Liveweight	57 kgs
Functional Survival	2.7%
Milkfat %	5.1%
Protein %	4.0%
Heifer Calving Dif	1.8%
Cow Calving Dif	0.4%
Fertility	3.5%
SCC	-0.07
BCS	0.15

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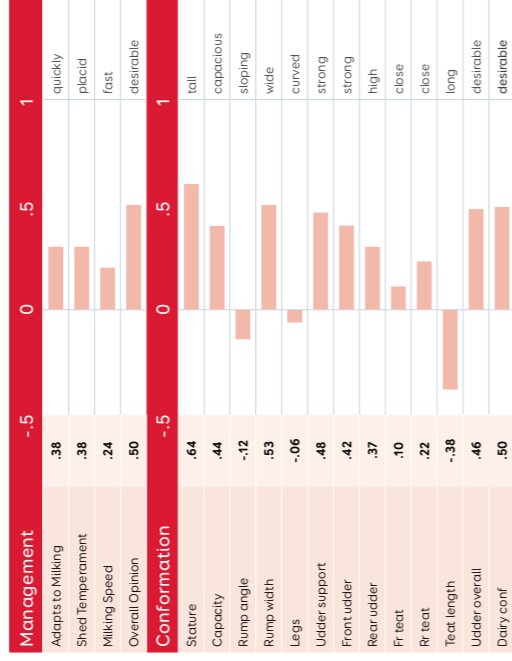
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Potential 2023 Spring Holstein-Friesian A2A2 Team

Sire	Sire
122046 ARON-AMY FINN ORACLE-ET SIF	121040 SPRING RIVER GG SPYRO SIF
122065 PRATTLEYS LUCID FREE-STYLE SIF	121043 MAHAREE TO NIRVANA S2F
122009 DICKSONS RS MARLIN-ET SIF	122092 TRONNOCO EQ SHEIK-ET S3F
122076 MURITAI ARENA LOMU-ET S3F	121069 TAFTS TRADESMAN S2F
122058 TELESIS FLEX THEODORE SIF	121001 MILL-RIDGE RC FORD-ET S3F
122008 DICKSONS FINN MINDESET-ET SIF	122026 KAIMORE GUSTO EROS S2F
122031 RITSON FINN NORTHSTAR SIF	122047 LIGHTBURN BUD MACH-ET S2F

WEIGHTED AVERAGES OF PREMIER SIRE[®]



HOOFPRINT[®]



HOOFPRINT[®]



HOOFPRINT[®]



gBW/Rel %	\$379/97
Milkfat	51 kgs
Protein	37 kgs
Milk	554 Litres
Liveweight	63 kgs
Functional Survival	2.8%
Milkfat %	5.2%
Protein %	4.1%
Heifer Calving Dif	1.7%
Cow Calving Dif	0.3%
Fertility	3.2%
SCC	0.04
BCS	0.13

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Potential 2023 Spring Holstein-Friesian Forward Pack Team

Sire	Sire
122080 WITTENHAM CP POLLMAN-P SIF	122013 DICKSONS AR MONOPOLLE-ET P S2F
122072 WAITARIA FINN TAIN-ET SIF	122025 TAUNTS ALLOY HARWILL SIF
122005 BERRYS MB HUMBLE S2F	122053 BUSYBROOK BE IMPLY-ET S2F
122034 BUELIN MB BLAST-OFF SIF	122011 DICKSONS GUSTO MR-RIGHT-ET S2F
122048 LIGHTBURN MS MEMPHIS-ET S2F	

WEIGHTED AVERAGES OF PREMIER SIRE[®]



Potential 2023 Spring Jersey Forward Pack Team

Sire	Sire
319037 OKURA TIRONUI BT MARCO ET	319037 OKURA TIRONUI BT MARCO ET
319030 GRANTZ BC HENDRIX ET S3J	319030 GRANTZ BC HENDRIX ET S3J
319023 CRESCENT MISTY DAWSON	319023 CRESCENT MISTY DAWSON
318063 GLENUI PEPPER SHAKER	318063 GLENUI PEPPER SHAKER
322022 JONES BB PHANTOM	322022 JONES BB PHANTOM
322002 PAYNES RB GENERATION-ET	322002 PAYNES RB GENERATION-ET
321008 GLANTON FLYNN BRISBANE	321008 GLANTON FLYNN BRISBANE
322036 GLANTON KFP BREMEN-ET	322007 CARATACUS FAVOUR DEFINITION-ET

WEIGHTED AVERAGES OF PREMIER SIRE[®]

Management	-5	0	.5	1
Adapts to Milking	.23			quickly
Shed Temperament	.23			placid
Milking Speed	.12			fast
Overall Opinion	.31			desirable
Conformation	-5	0	.5	1
Stature	-.92			tall
Capacity	.53			capacious
Rump angle	-.06			sloping
Rump width	-.11			wide
Legs	.06			curved
Udder support	.28			strong
Front udder	.39			strong
Rear udder	.50			high
Rr teat	.12			close
Fr teat	-.05			close
Teat length	-.02			long
Udder overall	.45			desirable
Dairy conf	.47			desirable



HOOFPRINT[®]
Methane Efficiency
Nitrogen Efficiency

gBW/Rel %	\$415/98
Milkfat	39 kgs
Protein	17 kgs
Milk	-238 Litres
Liveweight	-20 kgs
Functional Survival	2.7%
Milkfat %	5.9%
Protein %	4.4%
Heifer Calving Dif	-1.9%
Cow Calving Dif	-0.9%
Fertility	3.1%
SCC	-0.14
BCS	0.16

NB: the reliability of a team of bulls is always higher than using just one bull.
Shaded bulls include daughter information.
Date 19/05/2023



Potential 2023 Spring Jersey Daughter Proven Team

Sire	Sire
318001 OKURA PEPPER LUCCA	318035 SHELBY BC LOTTO ET S3J
319037 OKURA TIRONUI BT MARCO ET	317049 SHELBY SS LORENZO S3J
316039 ULMARRATT GALLIVANT	319023 CRESCENT MISTY DAWSON
319030 GRANTZ BC HENDRIX ET S3J	318063 GLENUI PEPPER SHAKER

WEIGHTED AVERAGES OF PREMIER SIRE[®]

Management	-5	0	.5	1
Adapts to Milking	.34			quickly
Shed Temperament	.34			placid
Milking Speed	.17			fast
Overall Opinion	.40			desirable
Conformation	-5	0	.5	1
Stature	-.54			tall
Capacity	.50			capacious
Rump angle	-.22			sloping
Rump width	.02			wide
Legs	.08			curved
Udder support	.27			strong
Front udder	.44			strong
Rear udder	.48			high
Rr teat	.19			close
Fr teat	-.04			close
Teat length	.23			long
Udder overall	.47			desirable
Dairy conf	.45			desirable



HOOFPRINT[®]
Methane Efficiency
Nitrogen Efficiency

gBW/Rel %	\$405/99
Milkfat	39 kgs
Protein	17 kgs
Milk	-150 Litres
Liveweight	-23 kgs
Functional Survival	2.2%
Milkfat %	5.8%
Protein %	4.3%
Heifer Calving Dif	-2.0%
Cow Calving Dif	-0.8%
Fertility	4.1%
SCC	-0.09
BCS	0.14

NB: the reliability of a team of bulls is always higher than using just one bull.
Date 19/05/2023



Potential 2023 Spring Jersey Sexed Team

Sire	Sire
322001 PAYNES TITUS EXCELSIOR-ET	320020 THORNWOOD BANFF TITUS
322047 WILLIAMS BANFF JULIAN	321017 MONKS MISTY STRIKER
322014 HAWTHORN GROVE GL ODYSSEUS	322017 RIVERINALAZARO JAKE
322024 MONKS HOSS TANK	322202 OKURA TITUS KOWHAI
321012 DOUGHBOY DISTINCTION	322034 SCOTTS DALE KP CALVARY-ET
322012 CAWDOOR SAMBUCA	322200 LYNBROOK POPEYE TAILORMADE

WEIGHTED AVERAGES OF PREMIER SIRE[®]

Management	-5	0	.5	1
Adapts to Milking	.29			quickly
Shed Temperament	.30			placid
Milking Speed	.09			fast
Overall Opinion	.36			desirable
Conformation	-5	0	.5	1
Stature	-.73			tall
Capacity	.60			capacious
Rump angle	.02			sloping
Rump width	.00			wide
Legs	.09			curved
Udder support	.45			strong
Front udder	.56			strong
Rear udder	.68			high
Rr teat	.16			close
Fr teat	.05			close
Teat length	.06			long
Udder overall	.63			desirable
Dairy conf	.50			desirable



HOOFPRINT[®]
Methane Efficiency
Nitrogen Efficiency

gBW/Rel %	\$430/97
Milkfat	35 kgs
Protein	13 kgs
Milk	-386 Litres
Liveweight	-31 kgs
Functional Survival	2.8%
Milkfat %	6.0%
Protein %	4.4%
Heifer Calving Dif	-1.8%
Cow Calving Dif	-1.1%
Fertility	4.8%
SCC	-0.37
BCS	0.15

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Date 19/05/2023



Potential 2023 Spring KiwiCross® Forward Pack Team (F9J7)

Sire	Sire
518019 DIGGS HARDCOPY	522005 PAYNES DALLAS-ET
515025 SPEAKES SLIPSTREAM-ET	522017 BURGESS PLATO-ET
519068 VAN STRAALENS ELITE-ET	520059 HACKER ADVANTAGE-ET
518016 HORIZON ASCOTT	521028 SNOWLINE ANDY-ET
519020 PAYNES PROFESSOR-ET	522024 FOXTON TACTIGIAN
519001 GREENMILE TOMAHAWK	522059 JUFFERMANS MR-EXCLUSIVE
522006 PAYNES SPECIALIST	520005 PAYNES SUBLIME-ET
522050 JULIAN TU-MEXE	522077 CLOVALLEY SCORPION
522077 TATAWAI WRESTLER-ET	522069 BENTONS SECOND-CHANCE
522062 HENRY'S AMBITON	522002 PAYNES PURSUIT

WEIGHTED AVERAGES OF PREMIER SIRES

Management	-5	0	.5	1
Adapts to Milking	.25			quickly
Shed Temperature	.25			placid
Milking Speed	.13			fast
Overall Opinion	.31			desirable
Conformation	-5	0	.5	1
Stature	-.04			tall
Capacity	.62			capacious
Rump angle	.11			sloping
Rump width	.19			wide
Legs	.02			curved
Udder support	.55			strong
Front udder	.53			strong
Rear udder	.58			high
Fr teat	.08			close
Rr teat	.26			close
Teat length	-.09			long
Udder overall	.57			desirable
Dairy conf	.55			desirable

gBWRel %	\$441/99
Milkfat	49 kgs
Protein	33 kgs
Milk	302 Litres
Liveweight	17 kgs
Functional Survival	3.1%
Milkfat %	5.5%
Protein %	4.2%
Heifer Calving Dif BV	0.1%
Cow Calving Dif BV	-0.4%
Fertility	3.0%
SCC	-0.08
BCS	0.12

NB: the reliability of a team of bulls is always higher than using just one bull.
Shaded bulls include daughter information.
Date 19/05/2023



HOOFPRINT®
Methane Efficiency
Nitrogen Efficiency

Potential 2023 Spring KiwiCross® Daughter Proven Team (F9J7)

Sire	Sire
519034 GORDONS FLASH-GORDON	519061 ARKANS BALIFF
518019 DIGGS HARDCOPY	519082 HEAVNLY HEIGHTS JOSHUA
519068 VAN STRAALENS ELITE-ET	518016 HORIZON ASCOTT
515025 SPEAKES SLIPSTREAM-ET	519062 ARKANS BARRIER
519042 WERDERS SWEETSTAKE	519001 GREENMILE TOMAHAWK
519012 KOKOAMIO K2	519020 PAYNES PROFESSOR-ET

WEIGHTED AVERAGES OF PREMIER SIRES

Management	-5	0	.5	1
Adapts to Milking	.36			quickly
Shed Temperature	.36			placid
Milking Speed	.18			fast
Overall Opinion	.40			desirable
Conformation	-5	0	.5	1
Stature	-.17			tall
Capacity	.66			capacious
Rump angle	-.10			sloping
Rump width	.21			wide
Legs	.02			curved
Udder support	.56			strong
Front udder	.57			strong
Rear udder	.63			high
Fr teat	.23			close
Rr teat	.47			close
Teat length	-.31			long
Udder overall	.64			desirable
Dairy conf	.61			desirable

gBWRel %	\$384/99
Milkfat	42 kgs
Protein	30 kgs
Milk	365 Litres
Liveweight	9 kgs
Functional Survival	3.2%
Milkfat %	5.3%
Protein %	4.1%
Heifer Calving Dif	0.8%
Cow Calving Dif	-0.2%
Fertility	1.2%
SCC	-0.06
BCS	0.12

NB: the reliability of a team of bulls is always higher than using just one bull.

Date 19/05/2023



HOOFPRINT®
Methane Efficiency
Nitrogen Efficiency

Potential 2023 Spring KiwiCross® Sexed Team (F8J8)

Sire	Sire
522013 PAYNES PHYSICIST-ET	522025 FOXTON CONDUCTOR
522012 PAYNES GAMEBOY-ET	522034 BURMEISTER BRUISER-ET
521072 BALDRICKS SPECTACULAR	522053 WITTENHAM HAKEEM-ET
522064 BROWNS RANDY	522015 WELLS RIDGE MILLHOUSE
522038 ARKANS COMMANDO-ET	520037 GLENMEAD MARVELLOUS-ET
522060 KAIPER TEMPTATION-ET	522042 ARKANS PIONEER
521015 PAYNES STAMINA-ET	522084 ROUBROEKS AIR-RFLE-ET
521035 WIFFENS CENTURION	522049 JULIAN ADDITION

WEIGHTED AVERAGES OF PREMIER SIRES

Management	-5	0	.5	1
Adapts to Milking	.32			quickly
Shed Temperature	.33			placid
Milking Speed	.16			fast
Overall Opinion	.39			desirable
Conformation	-5	0	.5	1
Stature	.01			tall
Capacity	.65			capacious
Rump angle	-.02			sloping
Rump width	.21			wide
Legs	.01			curved
Udder support	.60			strong
Front udder	.68			strong
Rear udder	.65			high
Fr teat	.08			close
Rr teat	.18			close
Teat length	-.16			long
Udder overall	.66			desirable
Dairy conf	.62			desirable

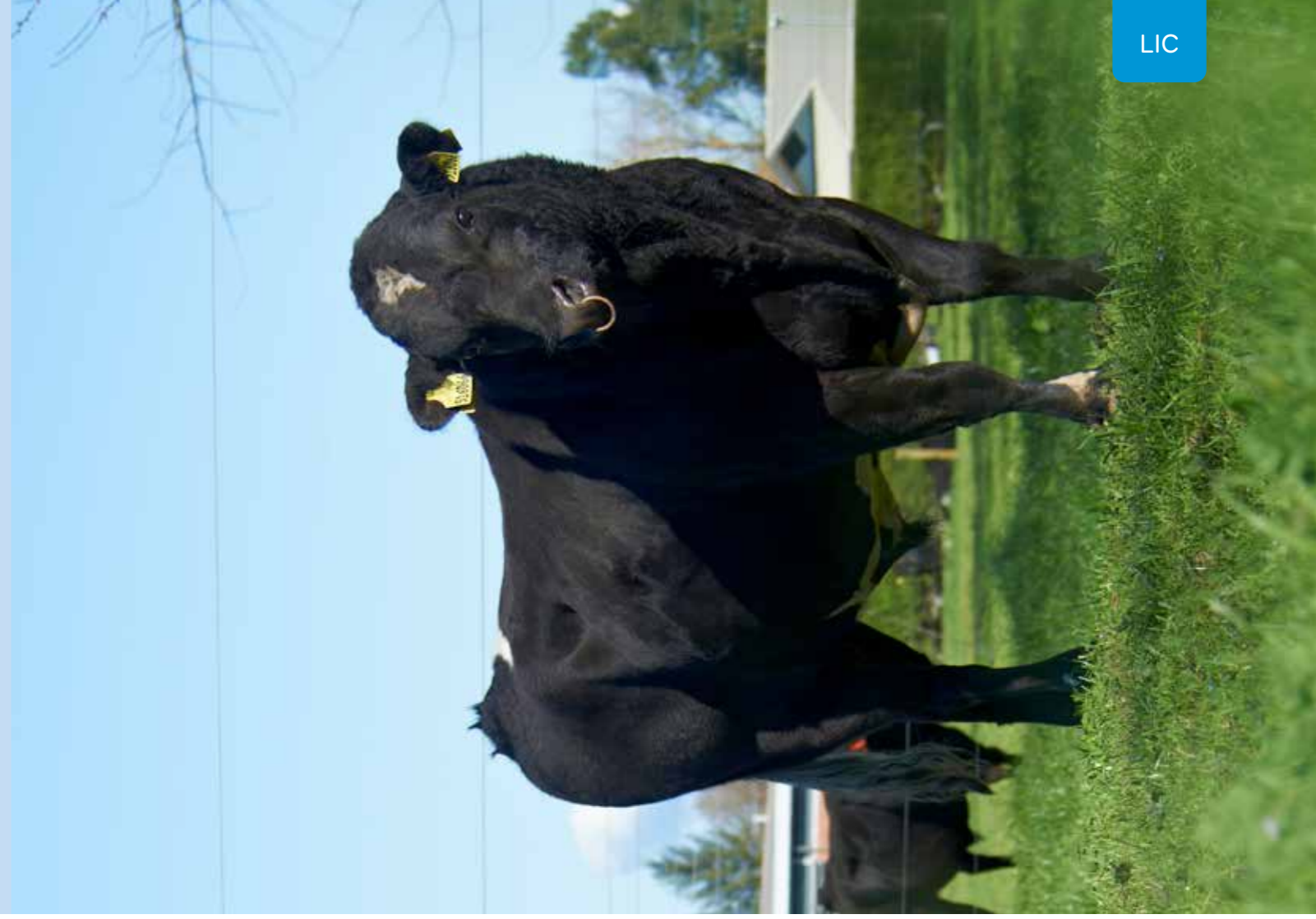
gBWRel %	\$455/97
Milkfat	49 kgs
Protein	32 kgs
Milk	235 Litres
Liveweight	18 kgs
Functional Survival	3.5%
Milkfat %	5.5%
Protein %	4.3%
Heifer Calving Dif	0.3%
Cow Calving Dif	-0.3%
Fertility	4.2%
SCC	-0.10
BCS	0.16

NB: the reliability of a team of bulls is always higher than using just one bull.

Date 19/05/2023



HOOFPRINT®
Methane Efficiency
Nitrogen Efficiency



STORM TROOPERS:

LIC re-visits shareholder-farmers Greg & Gail Mitchell in the Hawke's Bay, who endured Cyclone Gabrielle's wrath - but are determined to stick to their long-term goals, and for now are focusing on starting the new season afresh.

This is their story.

"That day it had been raining, so in the evening we saw the overnight forecast was for a couple of hundred millimetres of rain and we thought 'it's ok, it's not going to be too bad', and then we had no power, so we went to bed as usual.

"But we woke up to devastation. The measurements the next day showed in our district along here got between 500mm and 700mm of rain that night. I woke up at 3.30am to help milk, and it was a mess."

Greg Mitchell is a matter-of-fact, if under-stated, sort of a guy.

He and wife Gail own three Patoka, Hawke's Bay, dairy properties (including a 230ha run-off). Combined, the farms are home to 27 staff and their families, as well as 2400 milking cows, 600 rising two-year-old replacements, and 25 beef animals.

Similar to recent years, the farms - High Rd and Kaweka - were this season on-track to do nearly 1 million kilograms of milksolids, until cyclone Gabrielle struck.



Gail and Greg Mitchell on their High Rd Patoka farm

Greg & Gail Mitchell, Patoka:

Winners of Farm Environment Awards 2023, Hawke's Bay -East Coast region.

Three farms: High Rd (470 ha effective, 1500 KiwiCross cows); Kaweka (300 ha effective, 900 KiwiCross cows); and the nearby run-off, 230 ha.

Goals: To break through the 1 million kgMS barrier via genetic gain and improved pasture, and to break-in to the top 5% BW herds nationally (currently just outside).

Genetics: All-AB, except heifers. Premier Sires Forward Pack six weeks to top-85% of herd; followed by Speckle Park/Charolais and small number of Belgian Blue beef three weeks, and; SGL Dairy two weeks.

"I think the genomic technology is improving all the time and there's a lot more reliability these days so you're not getting as many young bulls dropping out. There's definitely better genetic gain going on in our herd, and it's ramping up... we're now close to the top 5% in the country and our goal is to get inside that." - Greg Mitchell.

Heat Detection: Collar technology.

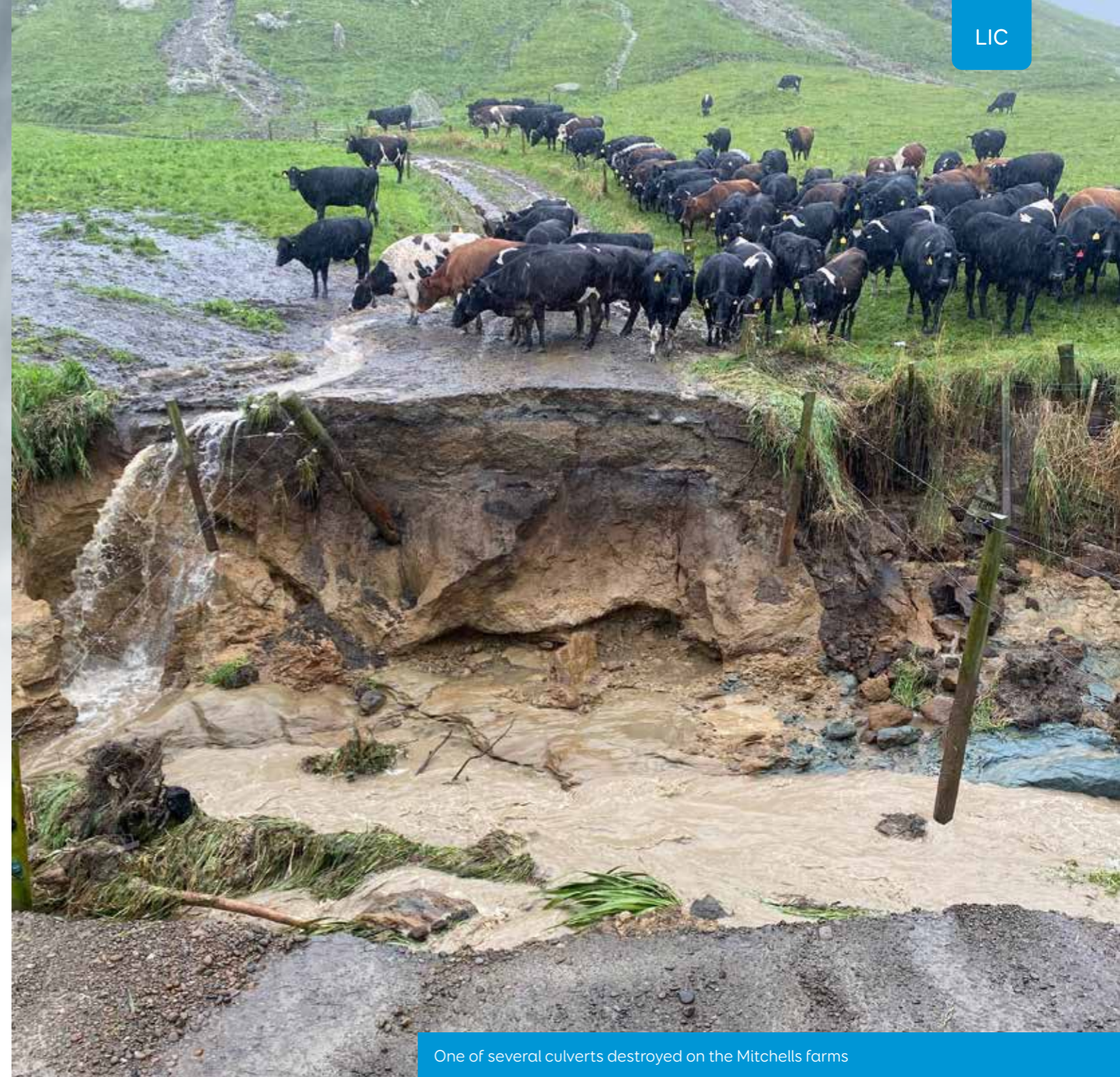
Sheds: Rotary x 2 fitted with Protrack. An old converted herringbone acts as a specialist vet and AB facility.

Breeding philosophy: Going for a smaller KiwiCross cow, utilising KiwiCross and Jersey bulls.

Farm currently has three LIC-contracted cows, one is being utilised for embryo transfer work.

Whole Herd Parentage verification (GeneMark).

Herd Testing: Four per season.



One of several culverts destroyed on the Mitchells farms

"I got up at 3.30am and immediately I knew water was bad," Greg says.

"There was 3 or 4 inches of water floating around our house. And the driveway down to the road was like a river, and the water got worse as got closer to cowshed.

"The most bizarre thing was the booming noises around us, like avalanches, which was basically all the hills in the district just giving way, just coming down. At that stage it was 'boom, boom' ... we

didn't know what was going on ... then, daylight, we saw it - it was incredible, just seeing the last of them (scarred hills) simply falling in to the gorges and rivers... trees, debris, land, all just falling away."

Although power had been down all night, communications were initially ok, and back at the house, Gail began realising the magnitude of what had hit Hawke's Bay via a Facebook page: "Greg came back from the shed at 6am and said 'holy s**t, this is big.'

"I contacted our sons in Napier and they were ok. It's then I realised how many bridges had been taken out. Then the cellphones went down at 7.30am."

Back at the shed, Greg was able to use a diesel generator for power: "The first thing we did was stay-put, and we knew we just had to get the cows milked. We then made sure all the rest of the stock were safe, and we had to make a plan for the

continued p.22



Greg endured confronting scenes as he walked 10km to his other farm



Six weeks on, a scene that's still typical of the flood-affected areas throughout Hawke's Bay



Rissington - old temporary bridge foreground, new temporary bridge background

people to keep them secure, fed, and looked-after."

Greg's other dairy farm, Kaweka, was 10km away. He initially jumped in the ute to visit the farm, but didn't get more than 1km, as road access had been wiped out.

He returned home to get a chainsaw.

"It took me the entire day to get to our other farm and back. I tried going down the road, I tried in the ute, I tried on my motorbike, I tried on my tractor... then I just had to walk.

"At certain stages I'd take a neighbour's motorbike, so I was able to ride part of it. I had no idea how bad it might have been at Kaweka, but we've got four staff there as well as their families, and I had to check they were all safe... it was the only way I could find out."

In the following few days, the skies were abuzz with helicopters and light planes, visiting the surrounding district to drop-in food and medical supplies. Greg and Gail hosted their staff and families at their converted B&B-style woolshed for dinner most evenings.

"Our bank manager arranged a helicopter to get us food. Then someone helicoptered in a vet to pregnancy-test all the cows, and they also brought in enough dry-cow product to dry them all off... so that was a big job for several days, operating in such wet conditions to get them all sorted - to go from good production to drying them all off within a couple of days in wet conditions.

"And we had no electric fences to keep cows all together, so essentially we had no paddocks. It was a challenge to dry them off and prevent them from making a mess all around the farm, and to keep them safe."

It was two weeks before access to the farm was open via road, and six weeks before the main bridge to Patoka at Rissington was restored (Greg jokes the previous 'temporary' bridge stood for 98 years before being washed away, and wonders if the new 'temporary' one will make a century).

Seven weeks on, by mid-April, the Mitchells had all but completed the replacement of 10km of destroyed fencing around their properties.

Tonnes of dirt has been shifted to fill-in culverts complete with new 1.5m pipes, and Greg and Gail will continue with their programme of planting up to 12,000 natives on farm each year, despite losing hundreds of recently planted trees and shrubs in the storm.

While several calves had been washed away that night, the farms didn't lose any milking stock to Gabrielle:

"But we've lost three cows since that night - all of them have slipped or fallen in to big tomos caused by the storm."

In terms of remediation work to the land, there's a long road ahead:

"It's not so much the slips on the hills that are the problem, it's what they've done to the flats," Greg says. "It's just silted-up the pasture, and we've got a lot of flat land that needs fixing."

Fonterra is compensating the Mitchells for their lost production until end of the 22/23 season, and the goal is to begin the new season afresh in July.



by Paul Charteris,
LIC beef genetics product lead

Selecting Super Beef Sires for Dairy

LIC's breeding team selects sires whose trait information indicates they are genetically-superior in calving ease, have a moderate gestation length, and have lower-than-average birth weights.

The selection decisions are largely based on Estimated Breeding Values (EBVs) for these traits - with most emphasis placed on calving ease and birth weight.

In general, LIC selects sires that will not increase gestation length above that of the average New Zealand dairy cow (282 days). Both the Hereford and the Angus SGL offerings in LIC's beef catalogue consist of sires that sit comfortably in the top 1% of their breed for gestation length.

Once the bulls enter widespread use, LIC's genetics product and sire selection teams review MINDA data to monitor trends in calving ease and gestation length for LIC sires.

In the Beef+Lamb NZ Dairy Beef Progeny Test, there is a wealth of data on how the progeny of individual beef sires perform when mated over dairy crossbred cows.

More than one-third of calves entering the beef industry each year were born on dairy farms. For the rearer and finisher, beef crossed over dairy cattle need to grow well, finish before their second winter, and yield.

Other than traits of dairy importance, sires with superior EBVs for weaning and yearling weight, carcass weight, eye muscle area (an indicator of yield), and intramuscular fat (or marbling) are LIC's main selection criteria. Sires from Rissington Cattle Company have feed efficiency data, so LIC is able to select individuals that are genetically superior for this trait.

The ability of sires to colour-mark beef crossed over dairy calves is

also considered by LIC's breeding team.

While the genetics behind coat colour of beef crossed over dairy animals is notoriously complicated, the Speckle Park, Belgian Blue, and Murray Grey sires were selected with coat colour in mind (in addition to their performance).

In the animal welfare and health space, LIC puts additional selection pressure on the selection of Polled sires within the Beef offering.

Less than a handful of beef sires in this year's LIC Genetics Catalogue (beef) are heterozygous polled (i.e. the sires have one copy of the horned gene). In future, LIC will target a 100% homozygous polled for its catalogue.



Speckle Park are polled, medium frame and early maturing (mature cow 650-800kg and mature bull 1000-1200kg)

SPACE™:

How LIC's Satellite Pasture Management System Is Helping A Nelson Farm Manager Achieve His Goals...



In 2019, the then-new farm manager, Warric Johnson, immediately adopted the SPACE service as his go-to pasture management system.

The jump in the farm's milksolid production has been on an upward trajectory since - going from 470k milsoiids in 2018 to an estimated 530k milksolids this year.

Causal or plain coincidence? Warric is in no-doubt.

Here we, profile his experience with the SPACE service

When Warric first moved to Nelson several years ago, it was to a much bigger farm than the previous 20-paddock Canterbury farm he had managed.

The new farm incorporated 100 paddocks across 450 hectares.

"It was the ease of use (that SPACE offered) that most-attracted me, I knew it could save me up to 10 hours of driving a week, and my time could be put to better use elsewhere," Warric says.

"When we first took over this farm, it was averaging around 470,000kg of milk solids a year. Now (4 years later) we're averaging 520,000 solids per year... we've had a 50,000 solid increase which the owners are putting down to better feeding, which comes down to better paddock selection.

So, on a \$8 payout, that's making the farm an extra \$400k." - Warric Johnson, contract milker.

Today, the aspect of the SPACE reports that Warric finds most useful is the paddock rankings, where the grazing orders are consistently good and reliable.

Warric acknowledges the system only provides estimates, which means 100% accuracy can't be guaranteed:

"But to be fair, you could get 20 consultants in a paddock and they'd all come up with different numbers.

"So, you know (in terms of pasture cover assessments), it's as good as you can get.

"And back in the dinosaur days we'd use a plate meter... but the plate meters can be pretty inconsistent, too. If someone's (for example) walking at a funny angle, or pre-determining where they're going to place it. Whereas the tow behind and LIC SPACE there's no fooling (human manipulation of) it."

And how are SPACE reports used?

"I'm the contract milker, so every report I get through I share with farm staff. I also send it onto the farm owner so everyone can see what's going on.

"They might not understand it, but at least they can view it and ask questions. At the end of the day the point is for everyone on the farm to know roughly what the cover is, and what the grazing order should be.

"But it's myself and the 2IC that make the decisions around the grazing and where the cows are going."

Warric says the paddock rankings have allowed him to increase both feed efficiency and feed quality, and the cows on the Nelson farm have never produced better milksolids.

"We're on-track to do 530,000 this year."

Warric said he wouldn't farm without the SPACE tool on the farm.

"Recently I've found out you can actually drop out paddocks that you've put summer crops into."

Yearling Matings



by Emma Gardiner, LIC dairy genetics extension specialist

Artificial Insemination (AI) over yearlings is among six key steps outlined by DairyNZ that can help a farmer improve their herd's breeding worth (BW).

Yearling-friendly bulls are offered by LIC which are specifically selected to be used across heifers for easier calving.

With an increasing focus on breeding more efficient replacements faster, the choice to carry out yearling matings is increasingly appealing, because it allows for faster genetic gain (via reducing the generation interval on the dam side).

The generation interval can be further reduced by tapping into genomic bull offerings via LIC's Premier Sires Forward Pack, or via LIC's Sexed teams and nominated genomic options.

Genetic gain is best realised through utilising high-BW sires that

possess the desired traits to match the farm's breeding objective (eg. udder support, fertility, milking speed).

Yearlings have a reputation for being highly fertile, but one of the fundamentals is to ensure they reach key liveweight targets prior to mating (so all animals have hit puberty and are cycling well).

MINDA Weights is an excellent tool to help farmers and graziers monitor yearlings; it uses the animal's liveweight breeding value to deliver an accurate reading of progress against individual- and group-liveweight targets.

For more information regarding achieving faster genetic gain within your herd, speak with your LIC agri manager.

SIX STEPS TO A HIGH-BW HERD (DairyNZ)

1. Use high-BW sires
2. Keep accurate and detailed records
3. Use DNA sire verification
4. Measure cow performance
5. Use AI over your best heifers
6. Target replacements from top cows



by Jayden Calder,
LIC herd improvement analyst

NZAEL Interim Fertility Update

The March 2023 New Zealand Animal Evaluation run saw a couple of key NZAEL-led enhancements to the national Animal Evaluation system.

These changes included an interim update to the fertility breeding value (BV) calculation; this separated gestation length from fertility, and introduced gestation length as the tenth trait in Breeding Worth (BW).

Following the changes to fertility released as a part of the NZAEL3.0 update in December 2021, the fertility trait is now measured as calving-season-day (CSD) - the number of days between planned start of calving and calving.

The challenge, with accurate measurement of fertility under this continuous trait measure, is the influence of gestation length on calving date.

As shown by figure 1 (p27), Cow 1 will have the same fertility measure as Cow 2, even though Cow 2 has a later conception date.

This highlights how short gestation length can influence the fertility BV and the need to account for this in fertility.

These challenges wouldn't be an issue if the heritability of gestation length was low.

However, with a heritability of greater than 50%, the extent to which genes control expression of gestation length is high.

Adding fuel to the fire is the low heritability of fertility (approximately 5%), therefore factors such as management and gestation length can cloud the estimation of 'true genetic fertility'.

For this reason, gestation length has been separated from fertility, providing a more accurate estimate of true genetic fertility for improved decision making.

This is an interim solution implemented across both NZAEL and

LIC models, as NZAEL works towards a long-term conception-based fertility measure in December 2023.

The breeding value definition remains as CR42; percentage of daughters expected to re-calve within 42 days from the planned start of calving, relative to daughters of a bull with a fertility breeding value of 0.

Gestation length is now included as the tenth trait in BW to account for the separation from fertility, and to recognise the value of shorter gestation length calvings.

Shorter gestation length drives value through more days in milk and more time to recover between calving and mating.

Gestation length has an economic value of -0.822 (\$/day) and a new economic value for fertility of 6.244 (\$/CR42 unit) has been implemented to account for the gestation length adjustment. The economic contribution of gestation length in BW is capped at -5 days BV to moderate selection pressure on the gestation length trait.

Finally, it's important to remind ourselves that genetics is only one component of reproductive performance.

Accurate estimation of genetic fertility is imperative to capture the genetic variation that exists for fertility. However, environmental and management factors will continue to have a significant influence on reproductive performance on-farm. Figure 2 highlights the increasing 6-week incalf rate associated with increasing fertility gBV, up to approximately 3-4 fertility gBV units

LIC bull teams were selected with the fertility changes in mind and the *LIC Genetics Catalogue 2023* was published with the new fertility breeding value.

For more information about these changes please refer to the NZAEL website.

Figure 1. Impact of differing gestation length on a calving date measure. Source - NZAEL March 2023

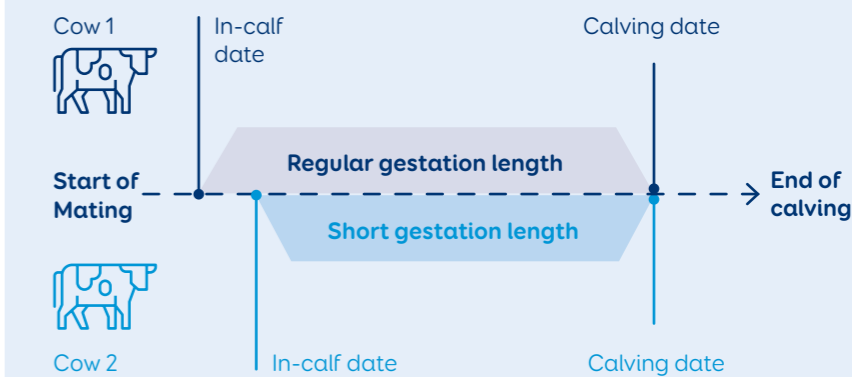
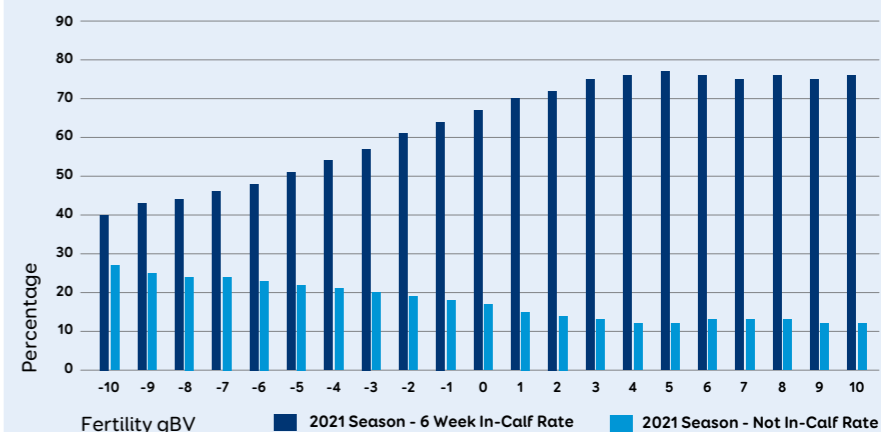


Figure 2. Relationship between updated Fertility gBV, (March 2023) and 6-week in-calf rate and not in-calf rate in >2.4 M cows with detailed pregnancy testing information recorded in MINDA, 2021 season. Source - LIC March 2023



With gestation length carrying a heritability of greater than 50%, the extent to which genes control expression of the trait is high.

Gestation Length has been separated from Fertility in NZAELs BW index



by Jayden Calder,
LIC herd improvement analyst

Reliability - There's no 'i' in Team

Don't overlook reliability when assessing whether young bulls will fulfil your breeding aspirations. What does it mean, and just what kind of impact does it have?

At mating, the choice of bulls to sire the next generation of replacements is many and varied: Premier Sires vs Alpha? This bull, or that bull? A team of five bulls or 10 bulls?

All decisions require a level of trust in the quality of animal evaluation information that sits behind bull selections.

The engine room of LIC's bull selections is the LIC genomic evaluation model, which had its most significant recent update implemented in February 2020.

Since then, both the number and quality of genotypes used for genomic evaluation has significantly increased, leading to better estimations of genetic merit.

The use of genomics has enabled for widespread use of bulls at a young age, years before the bulls' daughters have information of their own (e.g. herd test data).

While this reduction in the sire generation interval has huge benefits for increasing rates of genetic gain, it's important to not lose sight of the practical application of bull teams on-farm; more specifically, the reliability of gBW and the appropriate use of a team of young genomic bulls.

For all traits, reliability is measured on scale of 0 to 100%, and indicates the confidence that an animal's gBW (or individual breeding values) are a measure of their true merit. The breeding value for each trait has an associated reliability, and will change over time with the addition of more information from sources like ancestry and daughter information.

The gBW index is a combination of breeding values and economic

values for 10 traits that have measurable economic value to New Zealand dairy farmers. Changes to gBW are not limited to the addition of new information; factors such as economic value updates and model changes also influence gBW changes.

Ultimately, changes to gBW provide a more accurate ranking of bulls on their expected ability to breed profitable and efficient replacements, while reliability of gBW serves as a useful indication of the amount of information behind the estimate.

Without a genotype, a young bull will have a gBW that represents his parent average genetic merit, and will carry a gBW reliability of 30-40%.

At this early age it is not known whether the bull received a 'favourable' or 'unfavourable' combination of genes from sire and dam.

Early genomic prediction provides a far greater estimate of lifetime genetic merit over and above what can be obtained through parent average information alone

Cue the value proposition of genomics:

Take the same bull and add the information from his own genotype and the gBW reliability will increase to around 50-60%.

At this level of reliability, movement in gBW is still expected once daughter information is obtained for a young genomically-evaluated bull. However, the accuracy of this early genomic prediction provides a far

greater estimate of lifetime genetic merit over and above what can be obtained through parent average information alone.

What does this mean for bull selections?

Putting all your eggs in one basket, by choosing only a couple of young genomic bulls, opens the door for differences in team gBW expected vs team gBW delivered. But this should not deter farmers from selecting young genomic bulls, as early access to these genetics is an opportunity to get ahead of the pack.

Picking an adequate number of bulls means that the team gBW delivered will match the team gBW expected, smoothing out any upward or downward movements in gBW at an individual bull level.

Finding the sweet spot between gBW gain and target number of bulls will ensure that the risk versus reward is balanced appropriately, while maintaining genetic diversity across the herd.

Table 1 provides estimates of team gBW reliability under increasing numbers of young genomic bulls. The 'sweet spot' is around 6-10 young genomic bulls which will balance team gBW with team gBW reliability. Selecting more bulls will further increase the team gBW reliability, however may compromise genetic gain through having to select additional bulls.

The team approach is a non-negotiable principle to a balanced breeding approach which should always be considered at the time of making bull selections. Getting the balance right will manage the potential variation at an individual level, while breeding the best cows for your herd of the future.

Table 1: Estimated team gBW reliability for varied numbers of young genomic bulls

Number of Young Genomic Bulls	1	2	3	4	5	6
Team gBW Reliability (%)*	55	78	90	95	98	98

(*approximations only)



SLICK cows at LIC's Innovation Farm

by Esther Donkersloot,
LIC scientist (quantitative genetics)

SLICK: Developing Heat Tolerant Dairy Animals For NZ

Despite last summer failing to provide the heat that many Kiwis were after, heat stress on New Zealand farms is a factor that is garnering increasing interest and awareness within the dairy industry.

With climate change now accepted as part of Earth's future, Fonterra's 'Cooperative Difference' farm practice framework recommends development of management strategies for heat stress, including herd improvement strategies through the development of genetics for improved heat tolerance.

The 'SLICK' gene was discovered by LIC scientists in 2014. Cattle carrying the SLICK gene have a short coat and show improved heat tolerance. The SLICK gene has the potential to play a big role in the welfare of New Zealand dairy cows in the future.

Ironically, this gene to keep cows cool was only discovered after LIC scientists first identified a genetic variation that made cows noticeably hairy and heat intolerant.

LIC's Dr. Steve Davis was aware of overseas work on heat-tolerant genetics and realised that the understanding of the biology of the hairy coat could help in pinpointing the exact location of the SLICK gene, a gene that was known to cause a short coat and improved heat tolerance from overseas research.

Sequencing of a target region of DNA from SLICK cattle by LIC's Dr. Matt Littlejohn enabled the team to discover the precise genetic variation that caused the SLICK coat characteristics.



From left to right: Esther Donkersloot (project lead), Dr. Steve Davis (LIC's SLICK pioneer), Gemma Worth (trial lead).



Left: A SLICK coat vs right: a normal non-SLICK coat

This led to the start of a breeding programme at LIC in 2015 to produce heat tolerant dairy cows.

The first generation of the programme crossed the original SLICK-carrying breed, a Caribbean-based beef breed named Senepol, with New Zealand dairy cows.

Where possible, the breeding programme employed embryo technologies to accelerate breeding worth (BW) in the offspring of the initial SLICK crossbreds.

Carriers of the SLICK gene were identified by genotyping each generation, including genotyping of embryo biopsies.

Alongside the breeding programme, LIC scientists have been gathering large amounts of data relating to lactation performance, coat characteristics, and heat tolerance on the emerging SLICK animals.

This research has been undertaken at LIC's Innovation Farm as well as in cooperation with Massey and Lincoln University.

The highlight of trial research to date is the heat tolerance comparison of SLICK cows versus

their non-SLICK counterparts in milking heifers.

In Figure 1 it is illustrated that cows with the SLICK gene had a lower rumen temperature (0.5-1.0°C) compared to their non-SLICK control heifers when the Temperature Humidity Index (THI) exceeded 73 (around an ambient temperature of 26°C and a humidity of 60%).

THI is a commonly used metric used for heat stress and combines both temperature and humidity.

After 9 years of breeding, we now have SLICK sires with a BW approaching that of the best dairy sires on offer in the New Zealand

industry, with only 1/32nd average content of Senepol genes.

The trial work remains ongoing to ensure that when genetics get released to New Zealand farmers LIC has a robust understanding of the performance of the SLICK gene.

The next step in the breeding programme is to custom mate SLICK genetics with elite cows on selected commercial farms in New Zealand.

This step should significantly increase the rate of genetic improvement, while increasing the number of SLICK animals on the ground, and helping with diversity in LIC's breeding programme.

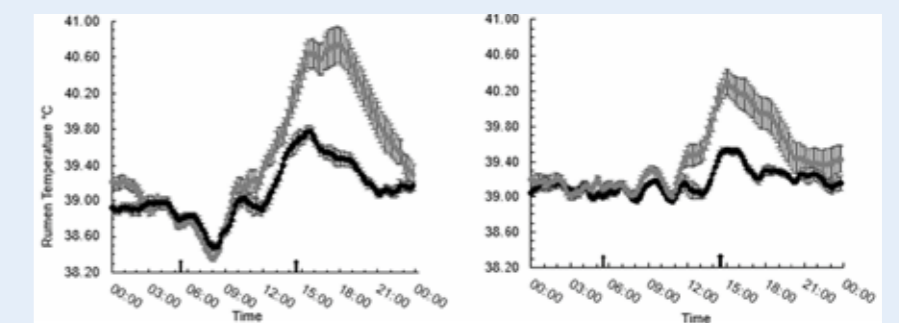


Figure 1. Mean rumen temperatures over 2 warm days for SLICK (black) and control (grey) heifer groups, where the THI and ambient temperature at 4 PM was, 74 THI and 26.3°C (left graph), and 75.7 THI and 27.8°C (right graph)

Celebrating Breeders' Day 2023



L to R: Shaun & Catherine Terry, Sarah & Aidan Stevenson, Dan Schat, Kelli Buckley



L to R: Grant Scott, Tony & Leslie Landers, Kirsten & Paul Midgley



Glenn Murfitt & Vaughan Keegan



L to R: Gaynor & Grant Scott



L to R: Leo Paalvast & Ngaire Wade



L to R: Dan Schat and Shaun & Catherine Terry



L to R: Cara How and Karen & John McErlean



L to R: William Mehrstens and Manpreet & Harmen Singh



Evan Smeath



L to R: Bryce Chrisholm, Pete Perrett and Paul Looney



L to R: Rob Thwaites and Claire & Michael Newson



L to R: Stu Gordon & Stewart Anderson



L to R: Troy Hughes & Victoria Scott



BREEDERS' DAY 2023, CLAUDELANDS ARENA, HAMILTON

Last month LIC hosted 160 leading dairy animal breeders from around New Zealand at the cooperative's annual Breeders' Day.

The day is a recognition and celebration of farmers who have bred a genetically-superior sire that has gone on to make LIC's 2022 Premier Sires team (as a member of its Forward Pack, A2/A2, Sexed, or Daughter Proven stable).

The breeders were treated to a bus tour of the bull farm and Sire Proving Scheme facilities, as well as

a parade of a number bulls at LIC's Newstead Bull Barn (where semen collections take place all-year-round).

That night was the main event: A formal drinks, dinner, and presentation evening at the Claudelands Event Centre in Hamilton.

More pictures inside....

