OCT NOV 2022

INSIDE DAIRY

Your levy in action

SHAPING UP

Making dairy a great place to work

// Exploring the frontiers of farming // Busting a pugging myth

// Breeding for fertility – does it work?

DairyNZ

OVER THE FENCE...

Recruiting farm staff has been tough in the last few years, and it still is now.

Securing good, reliable employees for our farms has certainly been more difficult since Covid-19 began. We're not alone – many other sectors are facing the same challenge – but that doesn't make it easier.

While we continue to work on the immigration rules, DairyNZ has begun a new programme of work to ensure dairy farming is attracting and keeping our best people on farms. The *Great Futures in Dairying* plan has three goals: to grow and retain our people; to provide safe, modern and productive workplaces; and to attract a more diverse talent pool.

Bay of Plenty farm manager Dayna Rowe helped us launch the plan, and we caught up with her for this issue's cover story. Dayna believes we need to shape up our farm workplaces to stay competitive with other sectors. Find out about her approach to supporting her team, career development, and work-life balance (for example, surfing on lunchbreaks).

Meanwhile, Taupō's Quinn Morgan shares his thoughts (page 8) on why we need to be looking in new places for our farm staff. Quinn has an interesting perspective as someone who's relatively new to the sector.

In November, DairyNZ is welcoming a new phase of our *Here for the Long Game* campaign. This multimedia campaign promotes the dairy sector to Kiwis nationwide to help build public trust and pride in the sector. This next step in the campaign will highlight the long-term commitment we've always had to being even better farmers and stewards of the land.

Here for the Long Game is part of DairyNZ's commitment to continually share with the public our positive sector story – keep an eye out for it soon.

Finally, we're in the middle of Board of Director elections – there are three farmers seeking your votes for two positions on the board. If you haven't voted yet, please do so at **dairynz.co.nz/agm** – and find more details on page 10.

As always, I'd love to hear your thoughts. Reach out to me at **tim.mackle@ceo.dairynz.co.nz**

Tim Mackle
Chief executive | DairyNZ

In this issue

Regulars

On the cover:
Bay of Plenty farm manager Dayna Rowe (far right) with team members (L to R) Jared Rendell, Nicolas Plaa and Dayna Ayling.

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We appreciate your feedback

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STAYING POWER

Bay of Plenty dairy farm manager Dayna Rowe and her team are building a great workplace together – one so energising, no one wants to leave. Here's how they're shaping up.

Dayna Rowe (2nd from right) is into her second season with team members (L-R) 2IC Dayna Ayling, senior farm assistant Nicolas Plaa and farm assistant Jared Rendell.

Born and raised on Rowe Farm, Dayna's now on track to take over the business.

Dayna Rowe's into only her second season of managing a farm team, but she's quickly found her preferred approach.

"It's the way you develop your team, it's the way you treat your team and really encourage them, that makes all the difference. That's been a huge part of my own style as I've come into managing staff," she says.

Despite being brought up on the family farm, Dayna didn't really fall in love with dairying until she got a summer job milking cows and spraying weeds at home during a university break. Four years, two farms and a lot of hard work later, Dayna was offered the 2021/22 season farm manager role on her parents' farm at Pongakawa near Te Puke.

Rowe Farm runs 970 cows on 289ha (effective), on "dead flat" land. Its peat soils lie very low and close to the water table, so it has a one-hectare herd home to feed and house the cows in during wet periods, and for calving in, in the winter months. The job offer topped off a great couple of years for Dayna; she'd won Bay of Plenty Dairy Trainee of the Year in the 2021 NZ Dairy Industry Awards, and been runner-up in the same category in 2020.

Great futures ahead

Now still only 24, Dayna's goal over the next three to five years is to continue building up the family farm, increasing her equity and purchasing some of the herd. Her passion and care for her farm team was clear for all to see when she spoke a few months ago at DairyNZ's launch of its *Great Futures in Dairying* workforce plan (see sidebar on page 7). The 10-year plan addresses the sector's current labour shortage, and Dayna commented on one of its three focus areas: helping the sector to 'shape up'.

"While the plan highlights what we already know – which is that we're under-staffed as an industry – it actually turns the question back to our community and puts the ball in the farmers' court," says Dayna.

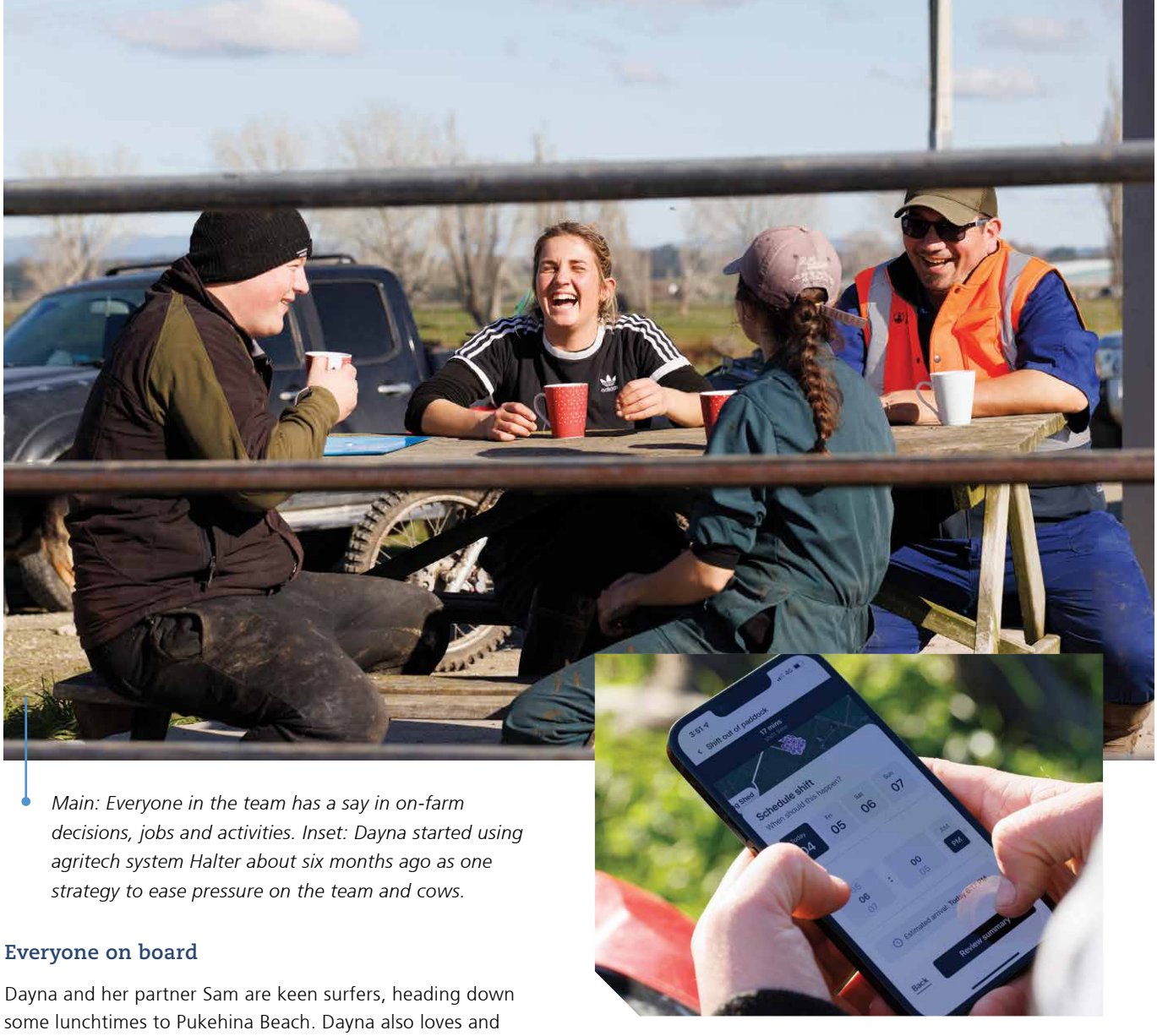
"We know what support we need from outside the farm gates, but the *Great Futures in Dairying* plan asks us what we can be doing as managers and farm owners to open up those farm gates and make the industry more appetising.

"Shaping up is about being competitive with every other industry in New Zealand. It's not just about the money – it's about being competitive in the way we treat our staff; in the way we can develop them and grow them through the industry."

FARM FACTS

Dayna Rowe

ROLE:	Farm manager
LOCATION:	Pongakawa, Bay of Plenty
FARM SIZE:	289ha (effective)
HERD SIZE:	970 KiwiCross
PRODUCTION:	358,460kg MS



Main: Everyone in the team has a say in on-farm decisions, jobs and activities. Inset: Dayna started using agritech system Halter about six months ago as one strategy to ease pressure on the team and cows.

Everyone on board

Dayna and her partner Sam are keen surfers, heading down some lunchtimes to Pukehina Beach. Dayna also loves and teaches dancing.

Her off-farm talents echo two key elements in her management style: balance and keeping everyone happily on their toes. Importantly, Dayna does this with their input. She lets her team have a major say in roster-setting, divvies up jobs based on their personal skillsets and preferences, holds off-farm team-building activities at least twice a season, and has a weekly team meeting on Tuesday mornings.

"Those meetings are run by the whole team. They're an open place for everyone to share, not just me speaking to them," emphasises Dayna.

She takes a similar approach when she sits down with each team member for a three-monthly one-on-one.

"I really let them lead that conversation, so I'm not putting any ideas in their head."

Dayna makes sure her team have an opportunity to upskill, too.

"They're welcome to do any sort of education, whether it be people management courses or Primary ITO courses. If they pass their course, we'll pay their fees – it's a little bit of an incentive for them to actually go and do well."

Milking the schedules

Dayna says she and her team's open discussions around roster-setting aim for maximum flexibility for all, "especially in the changing times of the seasons like calving".

"I make an initial roster; then it gets redone about three times to accommodate everyone's needs as best as I can. I like to make sure there's time for everyone's relationships and extracurricular activities: study, family time, whatever is important to them."

Last season saw a move to milking ten times in seven days (10-in-7), which has given more time for on-farm work, as well as family and other things like hobbies and off-farm activities. Over calving, milking shifts to three times in two days (3-in-2), with one of those weekend days being twice-a-day milking. They shift back to 10-in-7 at Christmas.

"A big part of it is flexibility," says Dayna. "If people want to work through the day so they can get to their kids' sport games by 3pm, or get to the doctor or other appointments, they're more than welcome to do that – so long as they communicate that with me."

"THOSE MEETINGS ARE RUN BY THE WHOLE TEAM. THEY'RE AN OPEN PLACE FOR EVERYONE TO SHARE, NOT JUST ME SPEAKING TO THEM."

Dayna's approach to shaping up a workplace

1 Treat people how you'd like to be treated

Everybody needs to be treated with respect. Farm assistants should be enjoying their job and feeling just as valued as managers, farm owners and 2ICs.

2 Make space for conversation

Let everybody catch up and drink their coffee for five minutes in the office before they start the day. Talk about what the plan is and what each of you is doing.

3 Listen and talk to your team

Your team knows how they could shape up – they already think about these things. So, ask them. Listen to them and take what they've got to say on board.

2IC Dayna Ayling wanted to work for Dayna Rowe because: "I knew I'd be able to gain good skills and knowledge from her, and working for a woman in management was also really inspiring."

"IF YOU GET A NAME FOR YOURSELF AS A WORKPLACE ENVIRONMENT THAT'S DESIRABLE TO WORK IN, YOU WILL ATTRACT PEOPLE WHO WANT TO WORK FOR YOU."

Getting out what you put in

Funnily enough, showing care for her team has circled back to Dayna.

"People on my team now often ask what I would like time for. They've offered to do things like night checks for me on the evenings where I like to do my sports after work or something. That shows they've noticed and appreciated me doing it for them."

Shaping up their workplace together has given everyone staying power too. Her whole team has stuck with Dayna from the end of last season into this season. Nobody had to change over at the start of calving, which Dayna says can be much more challenging if it involves training new people.

"That was an awesome feeling: that what we're doing together is working, people want to be here, and they want to stay a part of this team. If you get a name for yourself as a workplace environment that's desirable to work in, you will attract people who want to work for you."

Future opportunities

Dayna is acutely aware that changing the way people work on-farm will be a critical part of ensuring the dairy sector can offer great jobs and great workplaces. That's why she's such a supporter of the *Great Futures in Dairying* workforce plan – and its aim to attract and retain great people to reduce the current labour shortage. She knows it's going to take effort and buy-in from sector organisations, dairy companies, the Government, and most importantly, from farmers like herself and her team.

"We've got so many great opportunities in the dairy industry," Dayna says. "It's so flexible – you can concentrate on everyone's skillsets to decide who gets what job, too. You can think really differently about how a farm works.

"That's what's really cool: building a workplace that celebrates and creates a positive supportive environment. One that builds up the resilient workforce the *Great Futures in Dairying* plan talks about."

Three-pronged workforce plan

YOUR LEVY at WORK With DairyNZ

How do we address the critical shortage of workers on our dairy farms?

Alongside the urgent work we're doing to get staff onshore right now, DairyNZ has collaborated far and wide to develop *Great Futures in Dairying*. This 10-year plan sets out how we can attract, retain and grow our workforce on-farm.

This plan identifies three focus areas:

1. **Shape up** so we are competitive and grow and retain our people
2. **Change the job** to provide modern, productive and safe workplaces
3. **Look in new places** to attract a larger and more diverse talent pool

Read the plan and find out what on-farm changes you can make at **dairynz.co.nz/Great-Futures**

I've been **THINKING**

Personal trainer turned farmer Quinn Morgan (Ngāti Tūwharetoa and Te Āti Haunui-a-Pāpārangi) was blown away when he discovered the benefits of dairy life. Here are his thoughts on why others from non-farming backgrounds need to find out too.

"We all know we have a workforce shortage in dairy farming, and I believe we need to be looking in new places for our staff. I'm a product of that way of thinking. Before dairy farming, I was a city slicker working in Perth, as green as they come, but I was grateful to get my start in Edgecumbe with Sam and Kate Moore.

"The stability of this career really hooked me and it's something we need to talk more about because it separates us from other industries. We're an essential service. You get your house with the job, your work vehicle, you're not commuting, your kids get to grow up in the country. We're our own little suburb on each farm – we look after each other. That culture is what kept me here, and we really need to be telling that story.

"A great place to be doing that is in schools. I've been lucky enough to go to schools on some career days and, when we're at these schools, it's about inviting them to come and see what we do and all the awesome things our industry offers. We're not asking them to come and prove themselves – we're inviting them to give it a go.

"We also need to reach out to our local iwi, our local marae, and let them know we can offer an opportunity to anyone looking for work. For young Māori, the big drawcard to dairy farming is that kaitiakitanga *[guardianship]*: being able to work the land and work with animals.

"Things like manaakitanga *[respect, generosity and care]* are also strong in dairying, and we need to let our rangatahi know that. Those Māori values, I see them every day out on farm. When I got my start with Sam and Kate, I had nothing. They gave me a bed to sleep on and they filled up my freezer.

"I'm really proud to carry that culture on. I see myself as a link in a chain. The people before me have reached back to grab me, and I've got to do the same thing: reach back and grab the next person.

"That's why I'm talking to people, attending school careers days and posting on social media. And while it's great to recruit people with experience, attitude is a big thing too. All kinds of people need to know what dairying has to offer."

Leaving their life in Perth behind wasn't easy for Quinn and wife Samantha, but it's all been worth it to see their kids growing up on the land.

TALKING DAIRY

DairyNZ

Hear more about Quinn's dairying journey in *Talking Dairy* ep. 30 – **dairynz.co.nz/podcast**

Keeping in front of the competition

A new project will push the boundaries of what's possible in our farm systems, to keep New Zealand dairying ahead of our global competitors.

DairyNZ's Dr Paul Edwards says Frontier Farms will test novel systems, not just demonstrate current best practice or proven science.

YOUR LEVY at WORK With DairyNZ

What could the future of New Zealand dairying look like? And what do our farm systems need to deliver to remain competitive in the global market?

DairyNZ researchers hope to find answers to these questions, and more, through a new levy-funded project called Frontier Farms.

Dr Paul Edwards, project lead and DairyNZ researcher, says Frontier Farms is about creating profitable and sustainable farm systems that are ahead of where the frontier of international competitors will be in 2030.

"About 95% of our product is exported, so we need to be aware of how our product compares with other sources globally. This requires an understanding of the future attributes of our competitors' product."

The first competitor to be evaluated was United States mega-dairy farms.

"We chose US mega-dairy because it's one of the few players to have a strong operating profit margin in recent years, with an ability to scale up."

Paul is quick to point out this isn't about New Zealand adopting a US-style barn farming system.

"Frontier Farms is looking at how we can match or better our competitors' attributes, within our pasture-based farming model. A key word is 'future': it's not about what attributes their systems can deliver now, but in a decade's time, which involves identifying potential scenarios and working through their implications."

Frontier Farms follows a three-step process, says Paul.

"We start by analysing our competitiveness relative to a global exporter, or potential producer, under a range of future scenarios, and work out what our systems would need to deliver to maintain or increase competitiveness. Secondly, we design systems to meet this brief.

> **"We're working with dairy farmers and taking the risk of testing and refining these systems on their behalf.**

Lastly, we plan to establish a farm-scale demonstration to test and refine these systems."

This process is repeated with a new competitor a year later. In 2022/23, the team will assess alternative milks (plant-based and brewed synthetics) to better understand their competitive attributes and determine what market segments we compete in.

An integral part of Frontier Farms is working with dairy farmers and sector partners to co-develop these novel farm systems.

"This project aims to push boundaries. We're working with dairy farmers and taking the risk of testing and refining these systems on their behalf. These learnings should prove useful in the future," says Paul.

"Our overall measure of success is that we'll have created profitable and sustainable farm systems that are ahead of where the frontier of international competition will be in 2030."

Learn more at **dairynz.co.nz/frontierfarms**

Vote now for your DairyNZ directors

Your vote could make the difference, so don't miss having your say.

All levy-paying farmers are invited to vote by October 17 for their preferred candidate in this year's Board of Directors election. The elected candidates will play key roles in supporting DairyNZ's governance and leadership, helping to shape the future of our sector. Hear below from this year's candidates.

Chris Lewis

"Farming is in my DNA and is my children's future. Together, with my wife Caroline, daughter Olivia and son Daniel, we farm 500ha at Pukeatua, Waikato.

"As a farmer, I understand and have experienced the issues facing our sector. My related governance roles have equipped me with the skillset to get things done. I offer innovative thinking, while being forthright and challenging the status quo when required.

"I'm committed to building on an industry I'm passionate about, and helping to drive the strategic direction of New Zealand's agricultural sector."

Elaine Cook

"I am a proud dairy farmer, excited for the opportunities ahead and enthusiastic about the industry's future.

"Farming, life and proven governance experience ensures that I am effective as a director. My motto of 'stronger together & creating value for others' allows me to value the interests of others, ask the tough questions and contribute to seek solutions.

"I'm committed to ensuring DairyNZ continues to deliver relevant and quality science, advocacy and extension, working in the best interests of farmers to ensure they're supported, whilst maintaining the viability of their farming operations."

Tracy Brown

"I support a vision for economically, environmentally and socially sustainable dairy farming businesses.

"DairyNZ's role is to work with farmers and build a bridge between the science and on-farm application, to provide practical solutions that empower you to make good choices for your farm and communities.

"We need to provide robust and credible information for policy decisions, and advocate for workable solutions on your behalf. It is important that we help make dairying a career of choice, improve public perception, and work to improve our social license to operate."

Learn more about our candidates at **dairynz.co.nz/agm**

HOW TO VOTE

All levy-paying farmers should have received an email with a voting password and PIN, and information about the candidates. If you have any queries or haven't received an email, please contact 0800 666 935.

The successful candidate will also be announced at our Annual General Meeting – see page 22 for details.

DIRECTORS' REMUNERATION COMMITTEE

DairyNZ also invited nominations for one vacancy on the Directors' Remuneration Committee, which reviews directors' payments. No nominations were received for this position. The DairyNZ Board will determine how this vacancy will be filled.

Exploring results from the FVI trial

DairyNZ recently wrapped up a four-year Forage Value Index validation trial, producing some unexpected results.

To help farmers choose the best-performing ryegrass cultivars for their region, DairyNZ and research partners began developing the Forage Value Index (FVI) in 2012.

The online tool uses a five-star rating system for cultivars, with ratings based on dry matter yield performance data from small plot trials, and the estimated economic value of additional feed grown.

DairyNZ senior scientist Wendy Griffiths says that, since 2018, DairyNZ has tested the FVI under realistic farm conditions to see how farm system results stack up against predictions. The tests compare low-FVI (1- and 2-star) and high-FVI (4- and 5-star) perennial ryegrasses (diploid, common endophyte).

"We were expecting the milk production from cows grazing the high-FVI perennial ryegrasses would be greater than from those grazing the low ones but, surprisingly, that was not the case," says Wendy.

The Waikato trial site experienced dry summers, with January and February rainfall at about half of the 30-year average. This affected pasture growth and persistence, so the additional days in milk predicted from the high-FVI group did not occur. However, this does not appear to be the only factor at play.

"For the Upper North Island, we were expecting operating profit from the high-FVI group to be $300-$400/ha greater than the low-FVI group. The trial didn't achieve these predictions, so we're now developing the next phase to address why," says Wendy.

The team is now planning a deep dive into the data to identify the reasons for the trial results, exploring:

- climate impacts
- underlying Farmax modelling
- measurement methods for dry matter yield in plots and trials
- pasture quality
- plant-animal interactions
- scaling from plots to farmlets.

DairyNZ is confident the FVI approach, similar to the National Breeding Objective for animals, is the appropriate model to support plant breeding efforts and inform farmers about superior plant genetics in ryegrass cultivars.

> **The results of this review will also feed into further improvements to the FVI.**

"As soon as possible, we'll share new knowledge with farmers so they can continue to make informed ryegrass cultivar selections. We're continually reviewing and updating the FVI, and the results of this review will also feed into further improvements to the FVI," says Wendy.

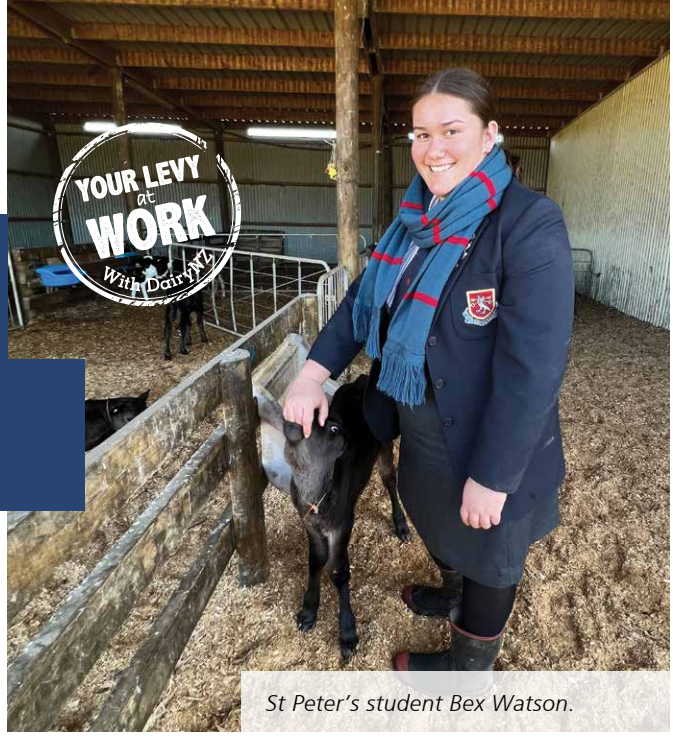
Watch this space for further updates.

Key points

- The validation trial under-taken across four years found no significant differences in whole-season milk production between cows grazing high- and low-FVI perennial ryegrasses.
- The economic value for seasonal dry matter and seasonal metabolisable energy content traits will be revisited.
- DairyNZ will investigate the reasons for the results and share findings with farmers.

Learn more about the results at **dairynz.co.nz/fvi-research**

Energised by agribusiness



St Peter's student Bex Watson.

Learning about everything from food science to future proofing is firing up our best and brightest high school students for careers in the primary sector.

As one of four sisters on her parents' dairy farm, Bex Watson thought she'd had enough of growing up around cows.

But taking part in the Agribusiness in Schools programme at St Peter's School in Cambridge, Waikato, has given the 17-year-old a new-found enthusiasm to go dairying.

The Year 13 student says the course has helped her learn more about current and future on-farm technologies, which she thinks make a career in farming more attractive, fun and enjoyable.

"What we learn in the course relates to what's currently happening in our primary industries," says Bex. "Stuff like the ProTrack automatic drafting system, automatic milking machines, Halter technology, reducing greenhouse gas emissions and the latest innovations in farming. We've also done other Achievement Standards like future proofing and cashflow forecasting."

Agribusiness in Schools was created in 2014 after DairyNZ and other sector partners worked with St Paul's Collegiate School, Hamilton, to design an agribusiness course for New Zealand secondary school senior students.

It's offered at NCEA Levels 2 and 3 and is designed for students who excel in science and commerce subjects. By 2021, the course was reaching 3216 students and receiving an enthusiastic uptake in schools nationwide (57% of them urban, 43% rural).

More students choosing agricultural careers will also help address labour shortages in the sector. The programme is led passionately by St Paul's staff Kerry Allen and Melanie Simmons, plus regional coordinators around the country.

"Access to the expertise of the DairyNZ team and resources ensures the programme has up-to-date, dairy-sector-specific information focusing on real-life issues, knowledge and skills. This ensures students understand individual agriscience and agribusiness career pathways and how their skills can provide practical solutions to the sector," says Melanie.

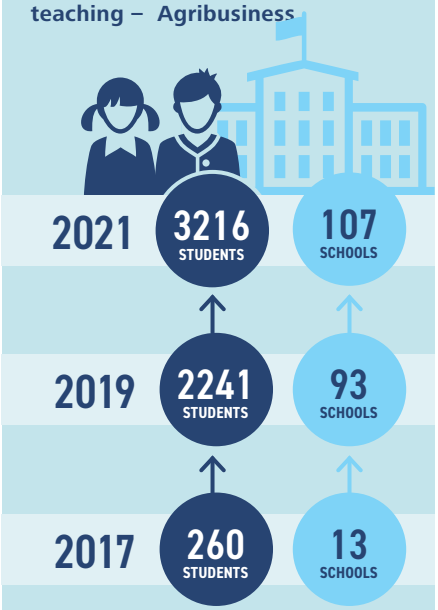
Bex is off to Lincoln University next year to do either a Bachelor of Commerce or Agriculture, as she's interested in the both the practical and business sides of dairy farming.

She's keen to encourage other students into the agribusiness course, so they can learn what's great about dairying too.

"It's super fun. You're outside, you're with animals and there's always something different during different seasons and times of the year."

By the numbers

There's been a significant increase in how many students are learning – and schools are teaching – Agribusiness



> **What we learn in the course relates to what's currently happening in our primary industries.**

Spread the word

Know a student who might be interested in doing the course? Send them to **agribusiness.school.nz**

‘Your staff will love it’

Changing the job: Angela Reid (right) and team are enjoying great gains thanks to flexible milking.

Angela Reid’s on-farm team are enjoying better balance at work, especially since the Southlander introduced 3-in-2 milking into the mix.

Angela manages North South Farms, a property under FarmRight management in Northern Southland. Switching to milking three times in two days (3-in-2) in 2020/21 saw some great gains for her team and herd, while also maintaining the operating profit margin relative to the regional average.

“Staff are happier at work and well-rested. They only have four early starts a fortnight instead of seven when they milked TAD. Animal health has benefited too,” says Angela.

Roster changes, and adjustments to drafting springers, mating, and grazing routines, were all part of the fine-tuning involved in moving to 3-in-2, and further improvements were made in the 2021/22 season.

Over calving on the single milking days, work starts at 7am, drafting springers through the cowshed yards before the 9am milking. On the double milking days, the springers come to the shed after the morning milking.

Angela says, instead of 24-hour grazing, they altered the feed allocation to match milking intervals, breaking it down into hourly requirements. The dairy near the farm’s centre has three lanes running into it. It can cater for up to three herds, with cows flowing in and out at the same time.

One of the biggest successes of flexible milking has been reproduction, says Angela. Submission rates were up on previous years – the three-week submission rate was 88% vs 72% for the previous year. Cows calving in the first three weeks of the 2021/22 season was 60% vs 52% in 2020/21; and the six-week calving rate was 87% vs 81%.

Initially, production didn’t peak as it normally would have, but as the season progressed, the cows held for longer.

Now in her third full season running 3-in-2, Angela says TAD milking is a thing of the past on the farm.

“I don’t see us changing back to it anytime soon. Our next step would be to try 10-in-7 for a full season.

“If you have good staff, the right systems in place, and can look at the bigger picture, then you and your staff will love it.”

> **“Staff are happier at work and well-rested.**

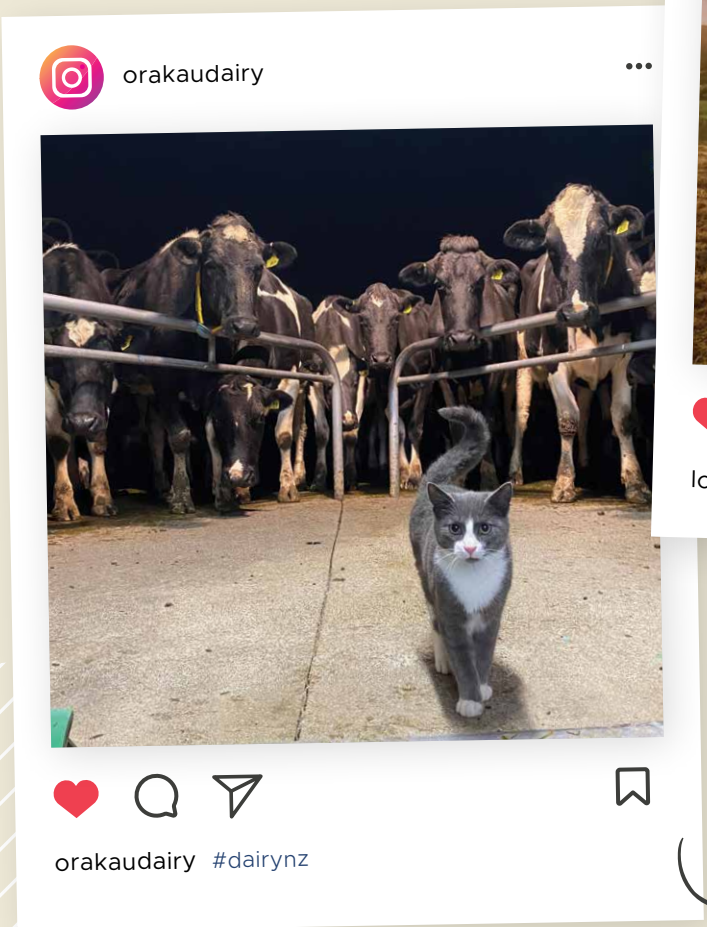
Flexible milking in action

To check out Angela’s full case study (including her rosters) and see other farmers using flexible milking, go to **dairynz.co.nz/flexible-farms**

Snapped on-farm

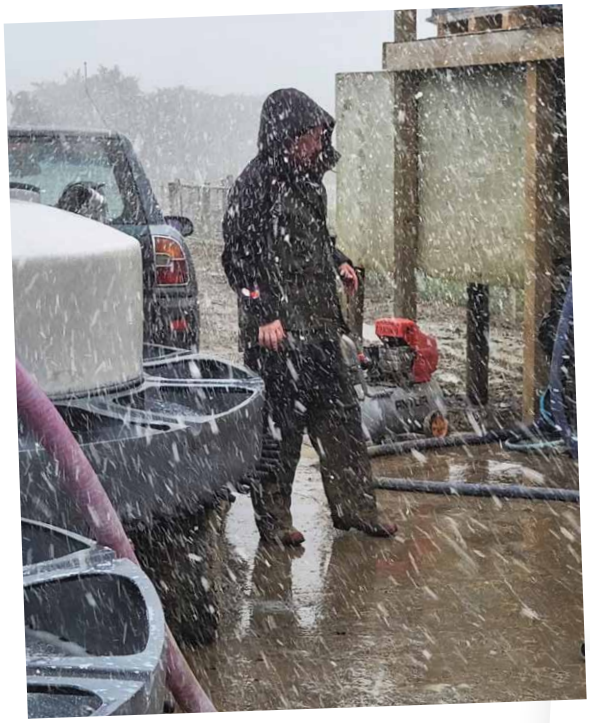
Here's a handful of our favourite farming photos from social media recently. If you'd like your photo to feature, share your snaps by tagging us on social media or using the **#dairynz** hashtag.

"Helping out a mama and baby in need."



"Shed kitten is quite photogenic."

ardel_dairies



ardel_dairies #dairynz

"Very cold day on farm today."

duncroft_dairies

duncroft_dairies #dairynz

"The cutest little farm visitor you ever did see."

Unlocking greater genetic gain

Better accuracy in animal evaluation will help farmers make better breeding decisions, writes New Zealand Animal Evaluation Limited's manager Andrew Fear.

To achieve genetic gain in individual herds and the national dairy herd, farmers need access to the right information when they're making breeding choices.

That's the job of New Zealand Animal Evaluation Limited (NZAEL), a wholly owned subsidiary of DairyNZ which produces independent animal evaluation data. Farmers can use this information to identify animals whose progeny are the most efficient at turning feed into quality milk.

Over the past six months, NZAEL has invested in world-class models and made improvements to the technology that delivers animal evaluation to farmers. This investment has helped to improve Breeding Worth (BW) and Breeding Value (BV) accuracy.

In April this year, NZAEL introduced Udder Overall as a BW trait and made changes in Liveweight BW. These changes were a result of farmer feedback through the recent National Breeding Objective review. This has increased the importance of udders in animal evaluation for farmers who want cows with a stronger udder for greater cow robustness and longevity. Changes made to Liveweight have improved the accuracy of data.

Udder Overall

Udder Overall considers the costs associated with cows that have poor udder conformation, including:

- risk of developing mastitis
- cost of wintering a cow whose udder deteriorates early in the season
- cost of rearing a heifer to replace a cow whose udder has failed.

Udder Overall has been developed differently to how other traits are evaluated due the complexity of the udder and its impact on milk production. This allows us to more effectively compare the difference in profitability between a cow with an average udder and a cow with a very poor udder.

Liveweight evaluation

Liveweight is included in BW to help evaluate cows' milking efficiency. We now have Liveweight BVs that provide a more effective selection for production efficiency.

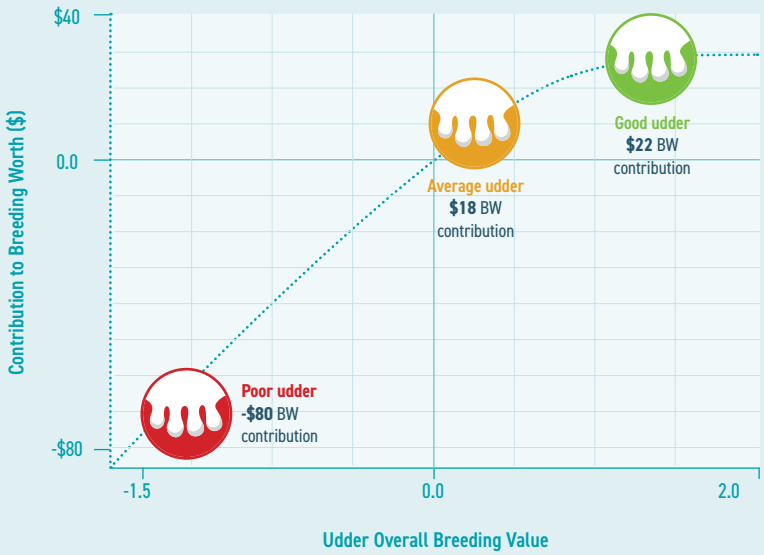
The key changes to Liveweight evaluation mean:

- only electronic scale weights for animals are included
- the heritability for mature liveweight is higher
- we account for the greater spread of weight in mature cows than younger cows.

Further improvements

NZAEL is now working with sector partners on including genomics in our independent national genetic evaluation system, expected to be released in 2023. Once that's implemented, the data will be more reliable and farmers will be able to make even more meaningful breeding decisions for greater profitability.

Better udder conformation = more production and profit



Want to improve the genetics of your herd? Get started at **dairynz.co.nz/animal-evaluation**

Are there areas of dairy farming you'd like to learn more about, or complex problems you need guidance with? DairyNZ's regional teams are here to support you.

Give your local Regional Partner a call if you're finding it hard to work out where to start with some of the tricky issues facing your farm business. Our team have the skills and experience to help you navigate complex farming challenges and create a plan to move forward. Regional Partners can also connect you with other service providers to help you find the best solution.

Or, perhaps you're looking for ways to improve your farming fundamentals, learning skills from or with your farming peers. Your local Extension Partner can support you via in-person and online events, discussion groups and other learning opportunities. Browse your region on **dairynz.co.nz/events** to see what's coming up near you.

Go to **dairynz.co.nz/contact-us** to find out more about your local DairyNZ Regional or Extension Partner, and how to contact them. You'll also find their names and contact details on page 25 of this magazine.

Reader survey – be in to win

We'd love to know your thoughts on *Inside Dairy*. What are you enjoying and how could we make it a better read for you? We want to ensure the magazine's covering the topics you're interested in, telling stories in the right way, and hitting the mark with levy-payers.

We're also keen to keep improving our *Talking Dairy* podcast, which has now passed more than 40,000 listens.

Complete our reader survey (2-3 minutes) and you'll go in the draw to **win one of five $100 Farm Source store vouchers.**

Head to **bit.ly/insidedairyfeedback** or scan the code to the right.

Terms and conditions apply.

mythbuster

What really affects lying time in winter?

It's commonly believed that pugging depth affects lying time during winter grazing, but is it the most important factor? DairyNZ senior scientist Dawn Dalley looks at what our levy-funded research has to say.

YOUR LEVY at WORK With DairyNZ

The theory

Winter grazing on crop paddocks typically involves allocating fresh crop daily using temporary fencing. These grazing practices at high stocking densities, in combination with rain, make the soil susceptible to damage, saturation and pugging. This can cause muddy conditions underfoot, resulting in periods where cows have little or no opportunity to lie down.

Keeping dairy cows in muddy areas has been raised as a potential animal welfare concern among New Zealand dairy industry stakeholders, with pugging depth thought to be one of the key factors.

The actual effect

Recent research (done by AgResearch and DairyNZ) at the Southern Dairy Hub looked at how weather and paddock conditions affect the lying behaviour of dairy cows during winter grazing.

We measured paddock conditions daily using simple and practical measures – e.g., pugging depth, surface water pooling, gumboot scoring, and soil moisture readings – to assess the suitability of the lying surface for dairy cattle.

We found that cows spent less time lying down as soil conditions deteriorated, especially when surface water pooling increased during rainfall events.

Further evidence

Paddock soil conditions, and thus the quality of the lying surface, deteriorated during and after rainfall, resulting in average lying time decreasing from 8-10 hours per day to 4-6 hours per day. This is consistent with other research, confirming cows spend less time lying down when the surface is wet, compared with dry conditions. Once soils are wet, it may take only 5-15mm of rainfall to significantly change lying conditions.

Overseas experimental work in cows exposed to muddy conditions (housed in pens indoors without inclement weather) found cows spent 3.2 hours lying down in the muddiest wet condition, compared with 12.5 hours lying down in the driest condition. The animals were more likely to lie on a concrete surface than a wet muddy surface. Other New Zealand research has also demonstrated that the wetness of the lying surface is more undesirable for cows than dirtiness.

Myth

Soil pugging depth has the biggest impact on cows' lying time during winter grazing on crops.

BUSTED

It's surface wetness and the amount of water pooling, not the depth of pugging, that has the biggest impact on cows' lying time in winter crop paddocks.

FOOTPRINT PROJECTS STEPPING AHEAD

Latest results from two Taranaki research projects are spiking interest.

With farmers facing significant challenges to their farming systems, the search is on for solutions that both increase profit and reduce environmental footprint.

Helping provide some answers are two farm system comparison trials at Dairy Trust Taranaki (DTT). The first trial is on DTT's Gibson Farm, which has been split into two 54ha farmlets. A 'current' approach using a higher stocking rate, 190kg N/ha, and more bought-in feed is being compared with a 'future' approach using a lower stocking rate, less N/ha, and less bought-in feed.

Results from years one and two have been encouraging, with greenhouse gas (GHG) emissions and nitrate leaching reductions achieved. In year two, profit per ha at both farms was also similar, although variations in milk price and input costs mean a single year's results can't fully inform the profitability comparison.

Compared with the Current farm, results from the Future farm for 2021/22 (Year 2) show a drop in the following:

	REDUCED BY
N INPUT	87kg N/ha
PASTURE GROWTH	0.4t DM/ha
MILK PRODUCTION	156kg MS/ha
OPERATING PROFIT	$110/ha (-2%)*
TOTAL GHG EMISSIONS	22%
METHANE EMISSIONS	15%
NITRATE LEACHING	9kg N/ha (24%)

Spikey® is a new technology being trialled at one of DTT's research farms. Photo: Pastoral Robotics Limited

Meanwhile, a new towable technology called Spikey® is being trialled on research farms around New Zealand. One of these trials is a full farm systems trial across two 25ha farmlets on DTT's Stratford Farm, where one farmlet is using Spikey, the other is not.

Designed by Pastoral Robotics Limited, Reese Engineering and ERL Engineering, Spikey® aims to enhance pasture growth, optimise fertiliser use and reduce N leaching and GHG emissions.

The machine has a two-fold action: a urine-patch detection and spray feature to reduce N-leaching at the spot, and in the commercial version, tractor-mounted cameras allow variable rate fertiliser application to improve nutrient use efficiency.

DairyNZ farm systems specialist Chris Glassey says results-wise, it's early days yet with Spikey®, with many variables to consider. While DairyNZ isn't directly involved, "we're watching Spikey's progress with interest," he says.

DTT is the farmer-led trust that leads dairy farm systems research in Taranaki. DairyNZ is contributing time and expertise to DTT's MPI-funded Gibson Farm project. Learn more at **dairytrusttaranaki.co.nz**

Read more about Spikey® at **pastoralrobotics.co.nz**

** from a profit of $5770/ha*

How-to guide for deferred grazing

Setting aside spring pasture for grazing in-situ either side of Christmas is a cheap and flexible form of pasture conservation. DairyNZ senior scientist Wendy Griffiths walks us through it.

Typically, deferred grazing involves closing off up to 10% of a farm's pasture paddocks annually in spring, holding over surplus pasture for grazing when there's a feed shortage. If you haven't done it before though, start small and work your way up to 10% as your confidence grows.

Why do it?

As well as covering feed deficits, you'll save time and money through pasture regeneration via natural re-seeding; minimise soil disturbance and compaction; and get better soil moisture retention from mature stands of grass.

Dropping paddocks out of rotation in early-mid October helps the rest of the farm too. Non-deferred paddocks are more likely to maintain pasture quality in late spring, and can be moved to longer round lengths, reducing stress on ryegrass plants during a dry summer.

You can choose either a shorter or longer deferral period. Shorter (40-60 days – graze pre-Christmas) helps carry feed over month-by-month, while longer (graze after 120 days) shifts feed into late summer for seed drop.

Long deferral – paddock closing and preparation

- Select poor-performing paddocks with a low perennial ryegrass plant density/ground cover.
- Before setting paddocks aside in early-mid October, graze them to 1500kg DM/ha.
- Finally, apply a broadleaf spray to avoid re-seeding weeds.

Opening the paddock for grazing

- Always check at the base of the pasture to make sure seeds have dropped on the soil surface.
- Pre-graze mow as needed: it increases feed utilisation (as does afternoon or night grazing during hot periods).
- Provide 10% of paddock area for the first break in a new paddock for space so cows don't fence-jump.
- Use a crop face to feed in long, narrow strips and watch for facial eczema spores if wet or humid.
- Post-graze mow as needed: to mulch the residual and retain soil moisture, or use dry stock, as required.

Post-deferral grazing management

- Graze clover re-growth before ryegrass seedlings germinate, so they're not shaded out.
- Before grazing re-seeded ryegrass, pluck-test to check new plants are firmly rooted (see how at **dairynz.co.nz/managing-new-pasture**).

Want to learn more?

Go to **dairynz.co.nz/deferred-grazing**, where you can also read our *Inside Dairy* case study on Cambridge farmers Ian and Natalie Butler.

TAKE 5

Tips for farmers

1.

Time to lock in leave

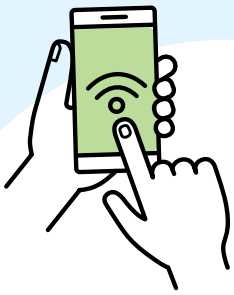
Get everyone sorted for time off over the summer holiday season. Arrange a relief milker, or if you're managing with a smaller team over the break, decide who'll be a back-up if something goes wrong. Chat to your farm team now, and visit **dairynz.co.nz/leave**

2.

Prevent sprains and strains

Did you know 40% of sprains or strains are from a slip, trip or fall? Reduce the risk: tuck away hoses in sheds after use, and wear boots with good ankle support and grip.

See our tips and short videos at **dairynz.co.nz/calving-safety**

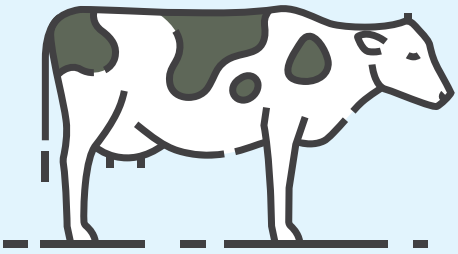


3.

Get the Fieldays app

Heading to Mystery Creek Fieldays Nov 30 to Dec 3? Download the Fieldays app before the event, available free via the App Store or Google Play – it has travel and parking info too. Make sure you visit DairyNZ's team in the Pavilion at site PC44 – you could win **$1500** worth of riparian plants!

4.



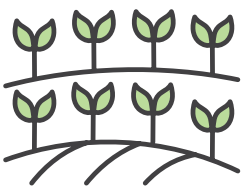
Keep an eye on SCC

At this time of year, peak milk production usually comes with low bulk milk somatic cell counts – but SCCs can start to rise from here. Reduce the risk now. Looking after cows' teats is an easy first step. Get advice at **dairynz.co.nz/mastitis**

5.

Establishing crops

Paddock selection and preparation are critical. Consider soil and crop type, topography, and what stock will graze the crop. Before planting, create a grazing plan identifying critical source areas and waterways that need protection. Get more tips at **dairynz.co.nz/strategic-grazing**



NZ Dairy Industry Awards: enter now for 2023

Whether you're an up-and-coming dairy farmer, or looking to boost your career in dairy management, consider entering the New Zealand Dairy Industry Awards 2023.

Take the opportunity to put your best foot forward, connect with other farmers, and be in to win some great prizes. Find out more about each category and hear from previous award recipients at **dairyindustryawards.co.nz/categories**

Entries open October 1.

Looking for a short course?

If you're keen to upskill, choose from four Dairy Training courses starting in October and November.

Business by the numbers
Focus on end-to-end budgeting, and cashflow planning and monitoring. New and experienced budgeters welcome. In-person or online.

Write a business plan
Get clarity to make your business and personal goals a success. Complete your business plan in class. Ideal for ideal for couples and business partners. In-person or online.

Progression management
For assistant managers and managers looking to upskill in their current roles.

Contract milking
Build your understanding of contracts and budgeting for the best chance of success.

Dairy Training is a subsidiary of DairyNZ. Register for courses at **dairytraining.co.nz**

Managing critical source areas well is a great way to reduce sediment and nutrient loss from your farm.

New wintering rules proposed from Nov 1

Planning for winter 2023? Did you know the Government's new wintering on crop rules include changes to requirements around resowing annual forage crop paddocks, pugging, protecting critical source areas, and using sloping land?

DairyNZ, in partnership with Federated Farmers and Beef + Lamb NZ, has written to the Government requesting that the rules are delayed by 12 months because the Government has not delivered the Freshwater Farm Plan framework in time. However there are still things you can do now to improve environmental outcomes.

Talk to your DairyNZ extension partner or rural professional, and get more info at **dairynz.co.nz/wintering**

Join us at our AGM

Farmers are invited to attend our upcoming Annual General Meeting to hear about DairyNZ's highlights over the past year, and our key research projects, investments and future priorities. You'll also be able to vote on resolutions. The successful Board of Directors candidates (see details page 10) will also be announced at the meeting.

When: Tuesday, October 18.
Refreshments will be available from 12.15pm and the AGM starts from 12.30pm.

Where: Ascot Park Hotel, corner of Tay Street and Racecourse Road, Invercargill.

PILOT a success for West Coast farmers

A group of South Westland farmers have a head start on their farm environment plans, thanks to a recent training project that may soon be extended across the region.

YOUR LEVY at WORK With DairyNZ

Whataroa farm owner Kirsty Blackburn says the course has put her "10 steps ahead of what's to come". Photo: Clintonlloyd.com

Farming on the West Coast can be dynamic and challenging, so it's no surprise that developing farm environment plans (FEPs) in the region can be equally intimidating.

That's why earlier this year, Whataroa's first FEP pilot project was rolled out to over 16 South Westland dairy, sheep, beef, and deer farms. Training in-person was combined with online learning over five fortnightly sessions, followed by on-farm visits.

Project lead, Westland Milk's Taane Johnsen, says the initiative was devised by members of the West Coast Industry Working Group. It's a first for Whataroa and the West Coast – and there are plans to extend the pilot across the region.

"Given the concentration and variety of farms in South Westland, it seemed a good place to start," he says. "The training has given the farmers valuable and useful skills – while helping them to understand the changing regulations."

That's certainly been the case for South Westland farmers and ag contractors Kirsty and Damien Blackburn. They'd been finding the FEP process overwhelming, until workshops allowed them to translate the topics discussed into what they were seeing on-farm.

"We realised we'd been overthinking it," explains Kirsty. "The greenhouse gases thing in particular was giving me the heebie-jeebies. But after the team took us through a template to calculate our GHGs, it was nice to find out we're sitting under the radar and there's not too much we need to do."

The couple's contingency planning has strengthened too – particularly given they get up to six metres of rainfall each year. They also loved the proactive approach from the project team and council staff.

"They're there to help us before the regulations hit – it's so worth getting them on-farm. They've got lots of great suggestions and are here to work with us to get systems in place now."

> **"We realised we'd been overthinking it.**

Taane says the pilot farmers can now work with the Regional Council to progress their FEPs through its regulatory processes.

"Their efforts show the council that farmers here are passionate and committed to doing their best for the environment."

This project was supported by Westland Milk Products, the Ministry for Primary Industries (MPI), DairyNZ, Beef + Lamb NZ, DeerNZ, Development West Coast and the West Coast Regional Council.

Daniel and Emily Woolsey are hosting this year's Pasture Summit Spring Field Day in Southland.

Feature update

Southland/ South Otago

Pasture Summit is coming to Southland! Head along to Daniel and Emily Woolsey's farm on Gorge Road, October 19, to find out what makes their dairy business consistently profitable, and how they're adapting to change.

This is a great chance to get off-farm for an event hosted by farmers, for farmers, with input from dairy sector specialists. The Pasture Summit Spring Field Day is all about sharing ideas for achieving profitable food production from grass.

The session topics include profit drivers, people, equity pathways, and environment.

Find out more and register, visit **pasturesummit.co.nz**

Northland

Our regional team has been connecting with farmers at a recent round of cropping events, which focused on how to prepare soils, when to plant and what to be mindful of this coming season for weed and pest control. We encourage farmers to be especially vigilant of moth pest the Fall armyworm (**mpi.govt.nz/fall-armyworm**), and to check regional council rules when it's time to cultivate.

Fall armyworm caterpillar on corn.

Bay of Plenty

Are you are a farmer who's new to staff and financial management, a 2IC, or part of junior management? Register to upskill and gain a qualification in these areas with Dairy Training's free Progression Management course, hosted in conjunction with Bay of Plenty's DairyNZ team. Connect with other passionate farmers and build your knowledge in key financial concepts at one of the Bay of Plenty workshops this October. Go to **dairytraining.co.nz/pm**

Waikato

Meeting new farmers and helping them navigate different challenges is what DairyNZ regional partner Stephen Canton enjoys most about his job. With 18 years' experience at DairyNZ, across a range of roles, Stephen can help you with day-to-day decisions or challenges you're facing on-farm.

So, if you'd like some support with figuring out greenhouse gas emissions, compliance, farm management, or anything else, get in touch with Stephen on 027 475 0918 or stephen.canton@dairynz.co.nz

Taranaki

Having grown up on a fourth-generation dairy farm in Te Puke, Bay of Plenty, DairyNZ extension partner Ashley Primrose is passionate about supporting dairy farming communities. Whether it's listening to farmers' experiences, sharing her knowledge, or connecting farmers with their peers through groups and events, Ashley wants to help farmers thrive.

Meet Ashley at a Taranaki DairyNZ event or group near you, and/or get in touch with her on 021 246 5663 or ashley.primrose@dairynz.co.nz

Lower North Island

Winter conditions have been tough and supplement costs are rising, so now's the time to make sure you're hitting the mark with pasture management. Don't miss the Pasture Management Field Day, hosted by James Stewart in Ashurst, October 13, for a chance to refresh your spring management skills.

Find out more at **dairynz.co.nz/events**

Top of South

Keen to have a crack at or want to know more about the New Zealand Dairy Industry Awards? The West Coast/Top of South regional committee will be at Agfest, Greymouth Aerodrome, Oct 14-15. Visit the Ravensdown site to hear from past entrants on why they entered the awards programme. Entries open October 1, with early bird closing on October 22. Learn more at **dairyindustryawards.co.nz**

Canterbury / North Otago

Want to learn more about growing a successful contract milking business? Head along to a DairyNZ-run workshop for farmers in Dunsandel this November. You'll increase your knowledge across a range of topics, such as how to manage a successful team, how to create and grow your wealth, and opportunities for investment.

There will be a number of excellent speakers, including DairyNZ's Paul Bird, who'll discuss 'creating/growing your wealth'.

Go to **dairynz.co.nz/events** for details.

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Northland

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Extension Partner	Mike Bramley	027 486 4344
Extension Partner	Sarah Kimber	021 809 569

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Extension Partner	Chris de Wet	027 1800 4410
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Senior Extension Partner	Frank Portegys	027 807 9685
Extension Partner	Denise Knop	027 513 7201
Extension Partner	Ian Butler	027 1800 1981

Bay of Plenty

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Extension Partner	Chris Hurlston	021 225 8345

Taranaki

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Regional Partner	John Baylis	027 210 2137
Extension Partner	Ashley Primrose	021 246 5663
Extension Partner	Talissa Squire	027 1800 3499
Extension Partner	Katie Starsmore	027 1800 3707

Lower North Island

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Regional Partner	Michelle Greaves	021 280 8405
Extension Partner	Janine Swansson	027 381 2025
Extension Partner	Francesca Bennett	027 702 3760

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Extension Partner	Heather Donaldson	027 593 4124
Extension Partner	Amy Chamberlain	027 243 0943
Extension Partner	Hamish Lambeth	027 290 5988
Extension Partner	Alex Perrott	027 379 8069
Extension Partner	Nicola Blowey	027 1800 4721

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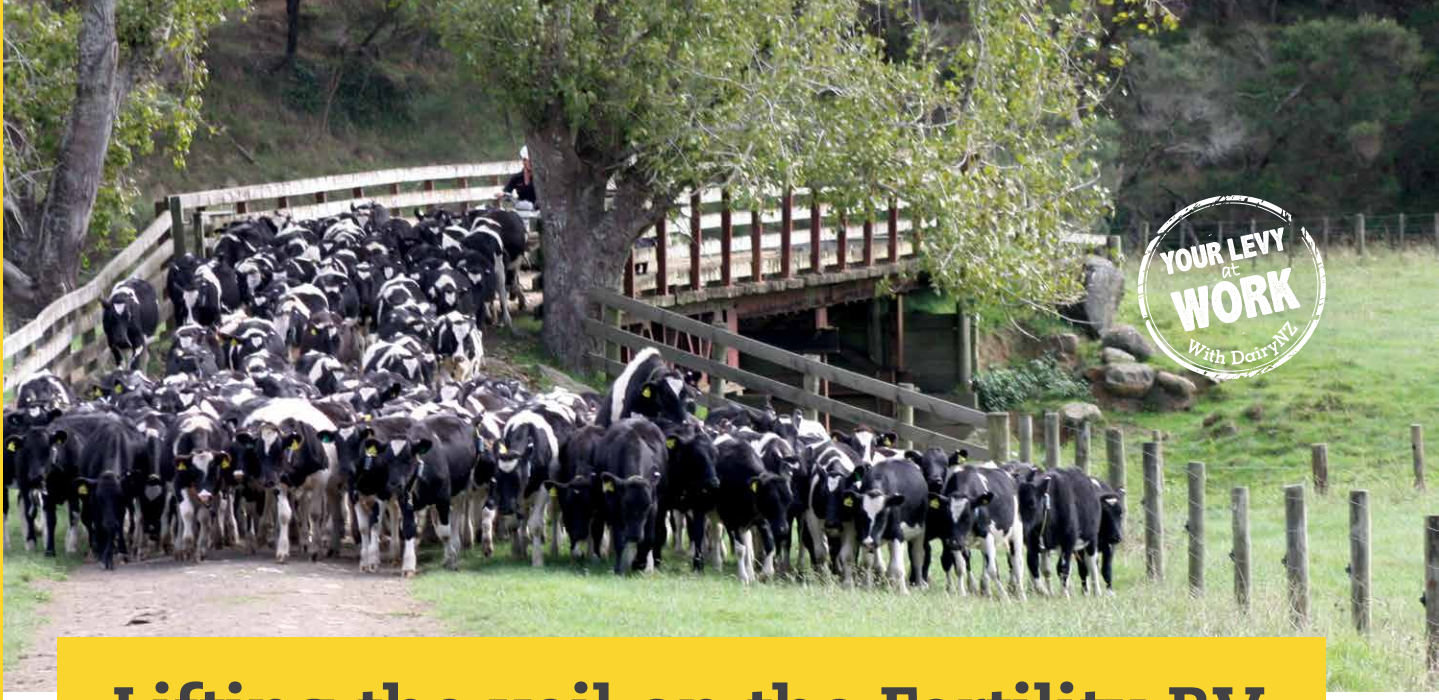
Elaine Cook	027 223 2049
Colin Glass	027 486 4064
Jacqueline Rowarth	027 694 4334
Tracy Brown	027 291 1716
Mary-Anne Macleod	021 923 332
Margaret Devlin	021 328 200



Lifting the veil on the Fertility BV

Does genetic selection for cow fertility result in better herd reproductive performance? Find out what we learned from a long-term comparison of animals with positive and negative Fertility Breeding Value, including a few surprising discoveries.

Susanne Meier
Science lead,
DairyNZ

Chris Burke
Senior scientist,
DairyNZ

Key research findings

- The six-week in-calf rate was 30% greater in the positive (+5%) Fertility BV cows in their first and second lactations.
- The not-in-calf rate of negative (-5%) Fertility BV cows exceeded 40% each year, which meant we couldn't maintain this group beyond the second lactation.
- Half of the cows with negative Fertility BV didn't cycle again after calving and required reproductive interventions.
- Heifers with positive Fertility BV reached puberty three weeks earlier.
- We also discovered novel traits linked with genetic fertility.

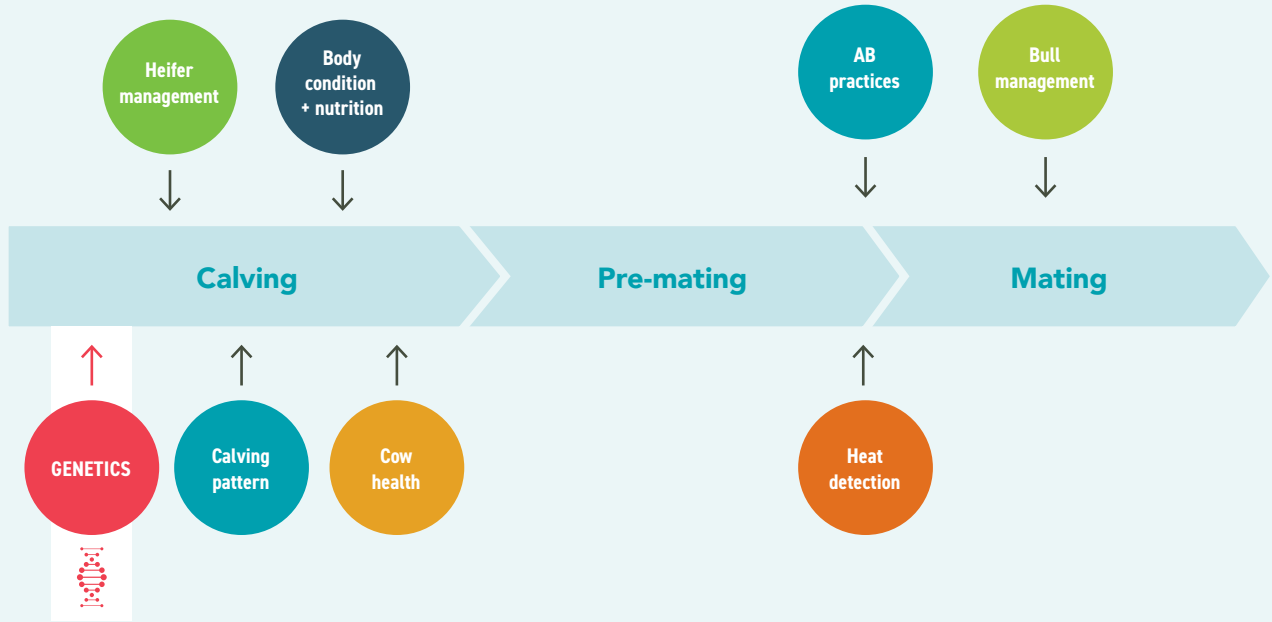
Improving our sector's overall herd reproductive performance is a pressing matter. The 6-week in-calf rate is a good overall measure of performance and is used as the national benchmark, with the target being 78%. However, our sector average is only 68%, while the top 25% of herds have a 6-week-in-calf rate of more than 73%[1]. To build more profitable and sustainable businesses, we need to get those rates higher.

DairyNZ's *The InCalf book*[2] outlines eight key management areas for improving herd reproductive performance *(Figure 1)*. These components contribute at different times of the annual cycle, and genetics is one component that can be used when farmers are making bull selection decisions. Remember, the benefits of better genetic fertility are cumulative and compounding across each crop of replacements.

Improving genetics for fertility

There's a significant economic reward from improving genetic fertility. That's why it's recognised in the Breeding Worth (BW) index, which ranks cows and bulls on their expected ability to breed profitable and efficient replacements.

Figure 1. Eight key management areas to improve herd reproductive performance[2]



The Fertility BV is one of nine components contributing to BW. It provides an objective measure of an animal's genetic merit for fertility. Before December 2021, the Fertility BV was estimated from whether an animal calved in the first 42 days of the herd's calving period (scored as 1) or later (scored as 0), using data from the second, third and fourth calvings. Mating data is also included, with cows scored as 1 if the animal was bred in the first 21 days of the mating period during lactations one, two and three; or scored as 0 if bred later.

In December 2021, two key changes to the fertility BV were implemented. Firstly, an animal's first calving (as a heifer) was included in her evaluation. Secondly, the old 1 or 0 scoring system was replaced with 'calving season day' (number of days between the herd's planned start of calving and a cow's calving date). This modification better rewards cows that calve earliest in the herd, while cows are more heavily penalised[3] if they calve later, are culled for poor fertility, or do not calve in the next season.

Our national herd has struggled to become genetically more fertile. There was a downwards trend between 2000 and 2015, but the Fertility BV has gradually increased since 2015[4]. Farmers can take advantage of this favourable trend by using sires with high BW and high Fertility BV. By doing so, you should expect to see better reproductive performance.

Unmasking the impact of Fertility BV

The sector needs to deliver continuous improvement of the Fertility BV, ensuring greater accuracy and a greater rate of gain. That's why, in 2014, we worked with some of our sector experts (NZAEL, LIC, CRV, AbacusBio and AgResearch) and farmers to generate a unique research herd of about 550 heifers with positive (+5%) and negative (-5%) Fertility BV.

To put the Fertility BV of these groups into context, the national average Fertility BV was -1.6% (standard deviation of +3.5%) for heifers born in 2015 based on NZAEL3.0 evaluations[3].

Differences in heifer performance

We didn't expect to see marked differences in reproductive measures of positive (POS) and negative (NEG) heifers because the Fertility BV uses data only from lactating cows (i.e., calving records and submission to artificial breeding records). We were surprised that the POS heifers achieved puberty three weeks earlier and at a much lower percentage of mature live weight than the NEG heifers[5]:

- Age at puberty: POS 358 days vs NEG 385 days.
- Live weight at puberty: POS 274 kg vs NEG 294kg.
- Percentage of expected mature live weight at puberty: POS 51% vs NEG 55%.

Consequently, 94% of the POS heifers had ovulated by the start of breeding, compared with 82% of the NEG heifers. The 3-week and 6-week in-calf rates were 13% and 9% greater in the POS compared with NEG heifers, with the POS heifers conceiving 3-4 days earlier than the NEG heifers (13 vs 16.6 days after the start of mating).

Whether age at puberty and timing of pregnancy in heifers is a helpful measure for accelerating Fertility BV gain is a question we're now addressing through large-scale studies.

Table 1. Calving rate for the positive and negative Fertility BV animals during their first and second calving

	POS Fertility BV	NEG Fertility BV
1st calving		
3 week	82%	72%
6 week	93%	93%
9 week	97%	97%
2nd calving		
3 week	62%	41%
6 week	82%	57%
9 week	96%	92%

Calving patterns in lactations one and two

In lactation one, the POS cows calved, on average, four days earlier than the NEG cows. By lactation two, the difference was 12 days earlier[6]. Hence, more POS animals calved within the first three weeks of seasonal calving during lactation one and two *(Table 1)*. This is not surprising, as Fertility BV is based on cows' ability to re-calve during the first six weeks of their second lactation.

Submission rates

In our research herd, submission rates were markedly different between the POS and NEG cows. The 3-week submission rates during lactations one and two were 87% and 88% in POS cows, compared with only 49% and 63% in NEG cows, respectively[6].

Calving pattern in the first lactation was not the cause of the poor submission rates for NEG cows. Instead, the poor submission rates were due to 46% of the NEG cows not cycling (anoestrus) in the first six weeks of mating, compared with only 5% of the POS cows. Furthermore, among the NEG cows that did cycle, their interval from calving to first oestrus was nine days longer than the POS cows that cycled. This delay in ovulation was seen in both lactations one and two.

The key finding here is that the ability of cows to resume cycling within a reasonable timeframe after calving (e.g., within six weeks) is likely to share a genetic link with the 6-week calving rate. So, measuring the time between a cow's calving and first heat may help improve the accuracy of the Fertility BV. We're currently investigating this possibility.

Conception and pregnancy rates

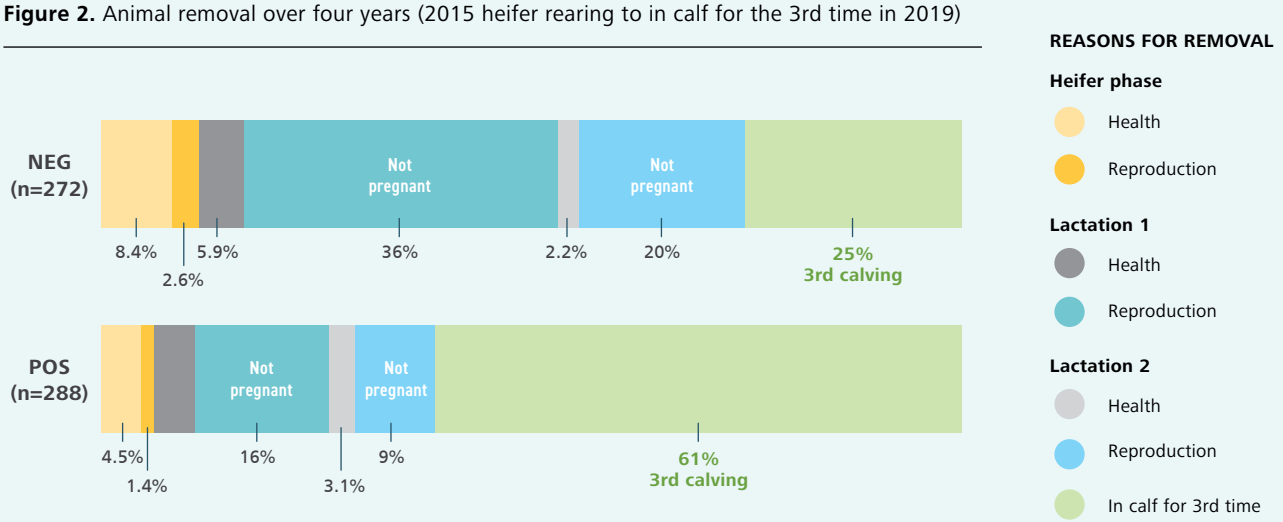
As we followed our research herd over the two seasons, we saw marked differences in the timing of conception and pregnancy rates between the POS and NEG animals. On average, the POS cows conceived 12 days earlier than the NEG cows. In lactations one and two, significantly more POS cows were pregnant by six weeks of artificial breeding[6]:

- Lactation 1: POS 67% vs NEG 34%.
- Lactation 2: POS 74% vs NEG 44%.

By the end of breeding in lactations one and two, there was a 10% to 14% difference in final in-calf rates between POS and NEG cows[6]. The high not-in-calf rates of the NEG cows resulted in a sizable percentage of this group being culled as non-pregnant each year *(Figure 2)*.

These data support an argument for basing the Fertility BV on conception success as a more direct and earlier measure of fertility than re-calving data. Foetal-aged pregnancy testing is a routine practice on more than 4000 farms[1], so there are enough industry records to use this trait in genetic evaluation.

Figure 2. Animal removal over four years (2015 heifer rearing to in calf for the 3rd time in 2019)



Heifer and cow survival

Survivability of this trial herd through to the third calving (pregnant at the end of lactation two) was markedly different between the POS and NEG lines *(Figure 2)*. Losses in the heifer groups were low, with 6% of the POS and 11% of the NEG heifers removed before their first calving.

However, only 25% of the NEG heifers survived to the point of being pregnant at the end of lactation two, compared with 61% of the POS heifers. The primary reason for culling was cows failing to conceive: the NEG cows had twice the removal rate of the POS cows *(Figure 2)*.

What next for Fertility BV?

The results of this long-term study clearly show that genetic selection for cow fertility results in tangible differences in herd reproductive performance.

Importantly, we discovered novel traits linked with genetic fertility. For example, a cow's genetic merit for fertility affects her ability to start cycling post-calving and calve in the first six weeks of the next season. Also, earlier 'puberty' and better 'heifer reproductive outcomes' are associated with the Fertility BV and, therefore, are better and earlier predictors of cow fertility than current measures based upon mating and calving records during lactation.

Large-scale validation and development studies of the new fertility traits are currently underway. The findings are encouraging, although further work is required before we can include these traits (e.g., age at puberty) into routine evaluations.

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We know dairy farmers have been putting in the hard mahi to make New Zealand the best it can be.

So, we've been working on a few things that'll show the rest of the country how dairy farmers are here for the long game.

This November, we'll be launching a new campaign that starts to tell the story about all the awesome things you've been doing to make New Zealand a better place.

It'll be hard to miss, but keep an eye out just in case.