

INSIDE DAIRY

Your levy in action



GREENER GRAZING UNITED

TEAM ON THE BALL WITH PASTURE MANAGEMENT

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OVER THE FENCE...

Our pasture-based farm system is uniquely New Zealand and it makes us one of the most efficient producers of dairy milk globally.

This issue of *Inside Dairy* looks at pasture management decision-making. How we manage our pasture is an integral part of farming and a priority for farm teams in their day-to-day work.

As we see rising costs around farm inputs, returning to the fundamentals of good pasture management will be crucial in securing ongoing profitability.

But pasture is also closely connected to our sector's sustainability. To remain competitive, our consumers at home and overseas tell us they want their food sustainably produced. Our pasture-based systems are our greatest asset in sustainable farming, and how we manage them will continue to be crucial.

Decades of research into pasture management has given us the edge – and we continue to research new solutions to drive an efficient and sustainable system. I encourage you to check out the pasture section at dairynz.co.nz to refresh yourself and the team on the latest information.

Thanks to Will Green and his team for sharing their approaches to pasture management in this issue's cover story. It's a great read. Will has a great philosophy around keeping it simple and keeping staff involved in grazing decisions – including instilling the fundamentals of pasture management in the whole team.

With the current risk around foot-and-mouth disease, we're also urging farmers at home to be extra vigilant, ensure their biosecurity practices on-farm are up to date, and report anything unusual. Visit dairynz.co.nz/fmd for more info.

Finally, we have two farmer-elected positions available on our Board of Directors, with nominations open from Monday, August 9. See more about this on page 23.

As always, I value any feedback you have. Get in touch with me at tim.mackle@dairynz.co.nz

Tim Mackle

Chief executive
DairyNZ

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On the cover:

Canterbury 47% sharemilker Will Green (centre) with team members Mark Laverty (left) and Dario Moreira.



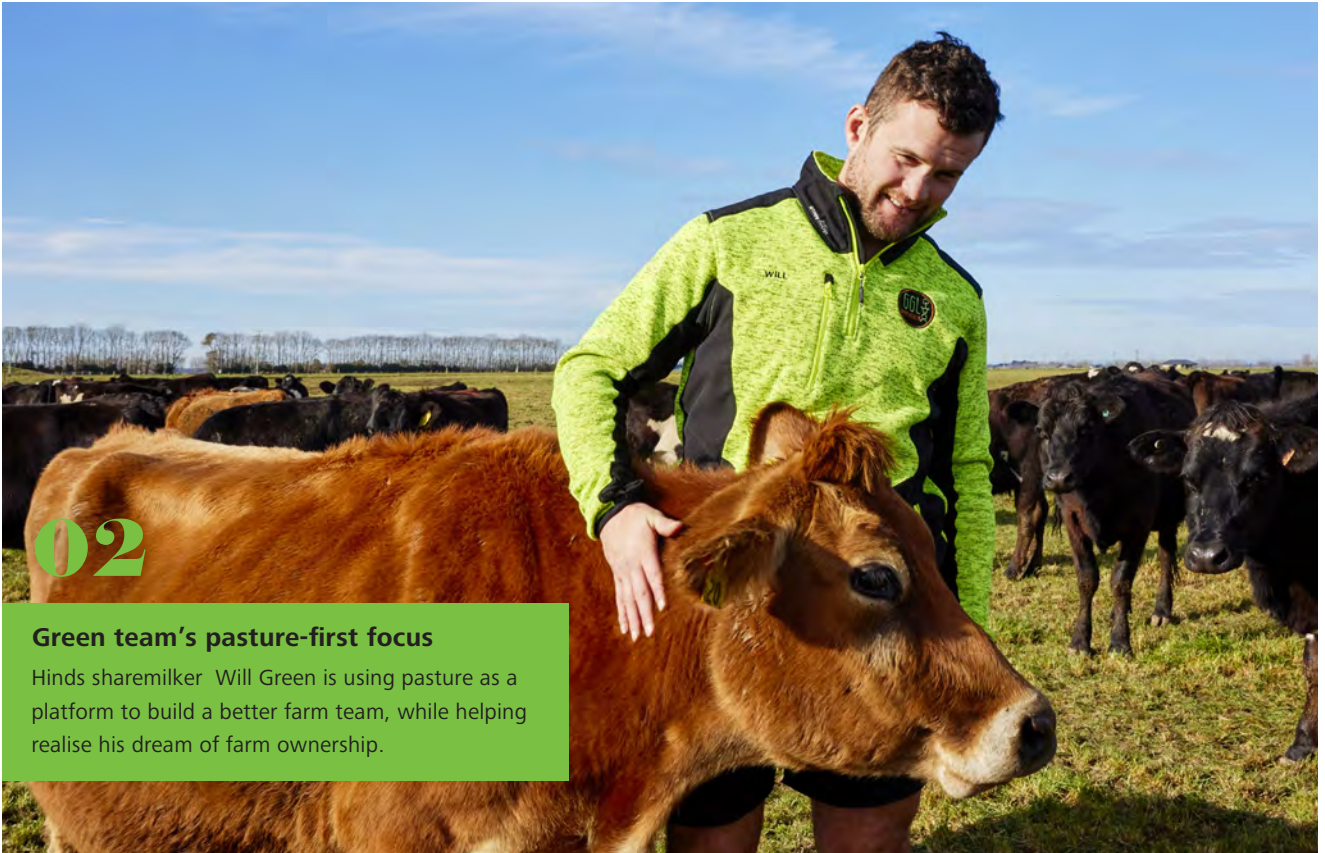
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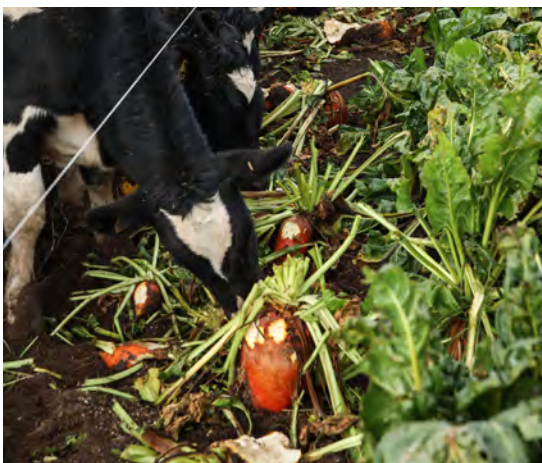
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We appreciate your feedback

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GREEN TEAM'S

PASTURE-FIRST FOCUS



FARM FACTS

Will Green

Role: 47% sharemilker for Dairy Holdings

Location: Hinds, mid-Canterbury

Farm size: 270ha

Herd size: 1060

Production: 360,000kg MS

Kiwi dairy farmers typically view pasture as their number-one, lowest-cost feed source. But Will Green takes that much further, using pasture as a platform to build a better farm team and greater farm skills, while helping realise his own dream of farm ownership.

Will's decision to make a dairying life in New Zealand has come from the ground up, founded on a belief that pasture is at the heart of Kiwi dairying success – and his own.

The Shropshire native's first experience of New Zealand was arriving to work in Taranaki for two months in 2009 on a practical stint while studying for an agricultural degree from Harper Adams University.

Taranaki gave Will a great introduction to fertile, well-watered, pasture-based farming.

He returned in 2014 to work here permanently, landing in Canterbury, and he quickly gained an appreciation for irrigation's role in guaranteeing pasture-based production from an otherwise dry climate region.

Pasture the path to ownership

Will's first full-time position was with Leonie and Kieran Guiney, a couple he'd read about and respected for their ability to run low-cost, efficient dairy units, and to motivate teams of young staff.

"I quickly came to see that, with irrigation, you almost have a guarantee of grass growth, and from that income, and you're able to really leverage that to move ahead."

This gelled well with his personal goal to own a farm, itself driven by his experiences back home in the United Kingdom. His own parents lease land on a large estate, running dairy cows, beef, and cropping.

"All I can recall I ever wanted to do was be a farmer and own my own farm."

"Pretty much everyone there is a tenant on someone else's estate. The opportunity to own what I work on is the key reason I am here. All I can recall I ever wanted to do was be a farmer and own my own farm."

If tenure was a motivator, he quickly saw that learning to manage high-quality, low-cost pasture was the pathway.

"In the UK, I'd seen how hard it can be to run a high-input system – you're making costly changes for relatively small gains."



Weekly team farm walks are about more than just monitoring feed levels, says Will, pictured with herdsman Dario Moreira (left) and 2iC Mark Laverty (centre). The walks are a chance for everyone to talk about the job, or anything else on their minds.

Will's three top tips for better pasture management

1. Keep it simple

Provide staff with a couple of key things to focus on, such as allocation area and grazing residual.

2. Round length is king, clover is queen

We tend to run a slightly longer round than most to ensure both ryegrass and clover have time to recover kilo for kilo. Clover is a superior feed to ryegrass, and you need to look after it too.

3. Put up a back fence with a portable trough when grazing

Preventing cows grazing outside their allocated area means the pasture grazed yesterday will start re-growing today, with clover recovering more quickly. Back-fencing is fundamental when we have smaller mobs, especially during calving when they can be in the same paddock for up to two weeks.

Moving on up

Will's success since arriving here has not gone unrecognised.

In May this year, he won the New Zealand Dairy Industry Awards' Share Farmer of the Year title. That came after winning Canterbury/North Otago Dairy Manager of the Year in 2018, and national runner-up in that section that same year.

He is now three years into a 47% sharemilking position with Dairy Holdings, poised to move to 50:50 next season with almost 100% equity in the herd.

" ... it's about feeding good grass, holding the round length, and adding just a few mineral supplements."

"We have been able to achieve a lot, and it's partly also due to Dairy Holdings sharing the same philosophy as me when it comes to farming. That is, it's about feeding good grass, holding the round length, and adding just a few mineral supplements," says Will.

"It's a simple approach, and one that means you can focus on other stuff like managing a large team well."

His focus on pasture and its production, quality and management is so singular that he considers himself "a pasture farmer who happens to turn grass into milk".

"But at the same time, we're concentrating on breeding high BW animals to ensure pasture is converted into milk as efficiently as possible."

Making every blade count

If irrigation provided greater certainty about pasture growth and ultimately production, low milk prices have reinforced the importance of making the most of that low-cost feed.

"It was a good lesson early on. When I arrived, the payout in year one dropped from \$4.25 to \$3.90/kg MS. It fortified my decision to stick with pasture as much as possible.

"While the milk price has gone up since, we have stuck to that approach."

Pasture is 100% of the herd's feed input during lactation, with cows wintered on Dairy Holdings' blocks on fodder beet. The only addition is minimal straw fed to springers and dry cows in late winter.

"There is no 'get out of jail – pull the string for more lollies' option here. That means I have to also instil the discipline in my team to learn to manage our pasture."

"There is no 'get out of jail – pull the string for more lollies' option here. That means I have to also instil the discipline in my team to learn to manage our pasture. The easiest way is complete transparency and good communication," says Will.

Pasture planning for the following lactation starts the summer before.

"Come January/February, as grass starts to go to seed, we push the round out from 25 days to 30 days. To help do that, we apply nitrogen at slightly higher rates than usual and drop out our empties as soon as they have been scanned."

He knows from the DairyNZ Spring Rotation Planner (SRP) he needs to open at calving with an average cover of 2800kg DM/ha.

"We grow 15kg DM/ha/day over winter, eat 5kg DM/ha/day with the heifers that stay on.

"We have 50 days of winter, so we can grow 500kg DM/ha. So, at May 31, we aim to have an average cover of 2300kg DM/ha to be sure of hitting that 2800kg DM/ha cover target."



Mark with one of the CropX soil sensors rolled out on Dairy Holdings farms to help improve decision-making around irrigation.
Inset: Smartphone-based technologies like WhatsApp and AgriNet's pasture recording app are an everyday part of the job for Team Green.



Team culture and community involvement are important to Will, who's even created an on-farm five-a-side soccer team, complete with uniforms, to play in a local competition.



Will's looking forward to moving to a 50:50 sharemilking role next year. Such a position on an irrigated Canterbury dairy operation is like winning the lottery, he says.

Teamwork, tech and tools

Typically, Will runs a team of four plus himself on the farm, with smartphone-based technology playing a big part in communicating grazing decisions, paddock allocations and feed demand forecasting.

"We use AgriNet, an Irish-based pasture recording system and app for all our recording and forecasting."

Staff are indoctrinated by Will over time to learn to judge pasture cover by eye, something he learnt himself and finds is quick, simple and accurate with practice.

The team communicates through a WhatsApp group chat, giving all team members the ability to see a screenshot of the farm's feed wedge as developed by the SRP, along with allocation areas for different mobs.

"They all have an allocated area of the farm that is their responsibility, so there's a nice bit of competition in there to see whose area is looking the tidiest."

"With the DairyNZ SRP feed wedge, we know what our daily allocation of area is. We divvy it up according to the different mobs, prioritising colostrum cows, then milkers, down through the springers, dry cows and late calvers. That defines your maximum area for the mob, you can use less, and that's great, but our aim is to avoid using over that."

If the team does end up needing to allocate more area than planned, they'll discuss why, and how to avoid it happening more often.

They aim for a consistent post-grazing residual of 1500kg DM/ha for much of the season, with residuals the signal for whether they're heading into a genuine farm feed surplus.

"If that residual is over for two to three days consistently, past balance day, we know to drop our allocated area, increase the area we set aside for re-seeding, or make more silage.

"Every year, the pressure eases early in spring, thanks to the team's ability to lift the 6-week in-calf rate, which now sits at 78%. That is well up on the national average of 65%, and Dairy Holdings' average of 75%, thanks in part to Dairy Holdings' focus on high-fertility sires lifting herd fertility.

"And with our pasture management focusing on milkers, they go onto a genuine rising plane of nutrition, getting cows flushed for fertility at mating time."

Walking in step

While tech is important for farm communication, Will turns a weekly farm pasture walk into a team-building exercise. His entire crew walks the farm, having a chance to catch up and discuss all and any aspects of the week's work.

"And they all have an allocated area of the farm that is their responsibility, so there's a nice bit of competition in there to see whose area is looking the tidiest. They each have a sense of ownership in the place."

Managing pasture well goes beyond simply making more milk and more money, says Will. He's turned it into a means of keeping in touch with each staff member, helping them learn to be better grass farmers, and gaining skills that fit well within the Dairy Holdings family.

"Basically, what we are doing is what was done in Taranaki 30 years ago: keeping it simple and very focused on allocating the right amount of pasture to the right mobs of cows."

PRACTISING WHAT SHE **PREACHED**



Aleisha placed runner-up in NZDIA's 2022 Waikato Share Farmer category, taking out the merit awards for pasture management and people management.

Science, technology and a bit of “magic” are all part of the pasture management mix for Waikato sharemilker Aleisha Broomfield.

As a DairyNZ consulting officer and Primary ITO tutor for several years, Aleisha was enthusiastic about teaching the fundamentals of pasture management to other farmers.

Now she's putting her knowledge into action as a 50:50 sharemilker of 250 Friesian Cross cows for Tauhei Farms near Te Aroha, where she's been since 2019.

Aleisha honed the technical aspects of pasture management through DairyNZ's Pasture Plus groups, and mentors and other farmers have helped expand her knowledge.

“Pasture management is a mixture of science and art. It's crucial to feed cows well and achieve high pasture eaten if you want to be profitable. It's also important to have good autumn strategies in place to set yourself up for a profitable new season,” she says.

Aleisha has a three-pronged approach to pasture management on the 86ha System 2 farm.

“The first is round length, the second is when to add more pasture area, and the third is monitoring average pasture cover. One and two are going through the process, but three is where the magic happens,” says Aleisha.

“A saying I've made up is that ‘farmers' footprints make the grass grow’.”

Aleisha uploads data into LIC's MINDA Land and Feed app. With a glance at her phone, she can view pasture cover, create a feed wedge, keep track of fertiliser and effluent applications, and maintain an inventory of PKE. She also records when each paddock is grazed, so she can use round lengths for decision-making.

“When calving begins in the first week in July, I'm aiming for average pasture cover of 2400kg DM/ha, and two months later, in the first or second week in September, I'm aiming for 1900kg DM/ha.

“In the first four to five weeks, I hold tight to the Spring Rotation Planner. If you have to hold the round tight, it's better to do it in early spring, prior to peak milksolids production later in spring.”

Farm walks are important, especially during August and September, when Aleisha does them every seven to 10 days.

“After that, it's a case of working out how many paddocks to shut up for silage. Each year we make between 200-400 bales on-farm.”

Aleisha says, with the extended drought conditions in the Waikato this autumn, it's more important than ever to manage pasture well through the winter, early spring and into the peak grass growth period.

“Better pasture management can help us harvest more milk from the same area of land at no additional cost, which is great the way on-farm costs are going.”

Take the guesswork out of your grazing management by using dairynz.co.nz/feed-tools



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 **#dairynz**.



Photographer:

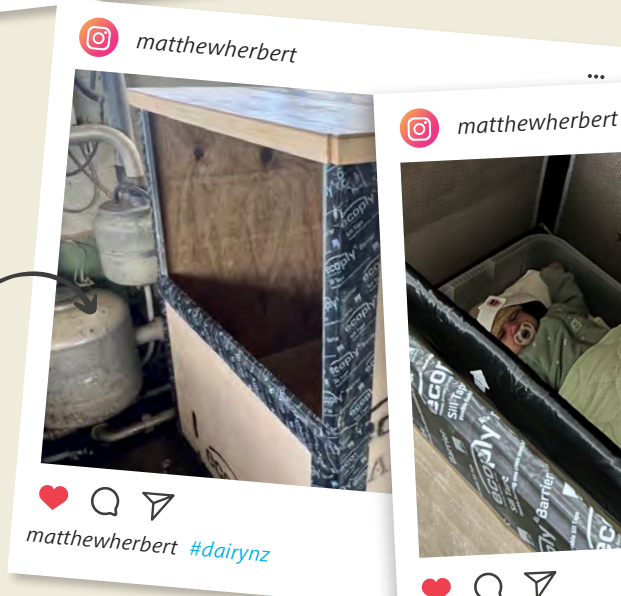
Amber Carpenter, sharemilker,
Amorangi Farms in Paparimu, South Auckland

"True farm kid this one. This is Noah (18 months) reading *Inside Dairy*. He loves the farming publications each week. We are pretty sure he would prefer to be milking cows and driving tractors than going to playgroup and daycare."

Photographer:

Matthew Herbert, contract milker,
Karapiro in Waikato

"Being a new parent shouldn't stop you from working if that's what you want to do, and milking cows is no exception. One of my team is a new single mum and she wants to keep working so she can build a good life for herself and bub. Thanks to an amazing friend for offering to put this fantastic little mansion together and bring my idea to life."



Photographer:



Hitting the sweet spot for tech investment

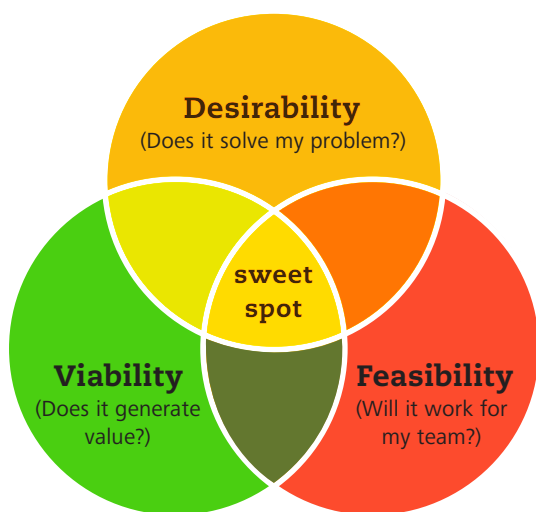


How do you assess the value of on-farm tech tools in saving you time, labour and/or money? DairyNZ research engineer Brian Dela Rue has some useful tips.

Dairy farmers are increasingly looking to technology to innovatively address sector challenges, such as creating attractive and productive workplaces, looking after our animals, and protecting the environment.

There is no shortage of innovators willing to design tools to address these challenges, but when and where should you invest in a new technology?

The innovation sweet spot



This sits in the overlap between a:

- **desirable solution** that addresses a real need on your farm
- **feasible solution** that works well and builds on the strengths of your current equipment and people
- **viable solution** that adds to your bottom line or has other value, like making the job easier.

A desirable solution

Having a plan and targets for all your business's areas (simple or detailed) will guide you to where to invest for the best impact and/or return.

Your targets might be to achieve improved management, labour savings, easier compliance, or better environmental outcomes.

Knowing your current performance and time/money per task, and what a successful solution might look like, is important. Try starting with FarmTune (dairynz.co.nz/FarmTune) to identify your biggest opportunities.

A feasible solution

Be open-minded towards all alternatives to achieve each outcome. For example, if a pain point is your available grazing management hours, then consider the options to address this, including:

- sourcing external labour for the task
- reducing hours required for the task, e.g., 24-hour rather than 12-hour grazing
- reallocating time, e.g., by reducing milking hours using Max-T, 10-in-7, or once-a-day (OAD) – these also shorten the working day
- automating the task using technology.

Ask whether you can achieve the technology's potential, and what its likely impact might be on your farm operations and team. It also needs to easily integrate well with your farm's existing technology and infrastructure. Visit other farmers with similar farm systems to find out what they're doing with tech and how it's working.

You should also get independent evidence of the tech's New Zealand performance, and check the supplier's service record/support for continuous improvement. Ask: are there any hidden costs and requirements – e.g., will you need farm-wide internet connectivity? Can you easily opt out of the tech if it doesn't deliver on expectations?

Even the best technologies can fail if they're poorly implemented and on-farm staff don't engage with them. It can be a bit of a juggle in balancing these considerations:

- What farm practices will need to change?
- What new skills will be required?
- Who will champion this technology to ensure success on your farm?
- Will there be any unintended consequences that need to be considered, e.g., fewer people on the milking roster?

A viable solution

Hitting the investment's innovation sweet spot is often compromised if you're only focusing on non-financial benefits to the farm business and/or team to justify the cost. For example, not all reduced hours result in financial saving (new tasks may be created), and any 'saved' hours may be used elsewhere on farm or result in a shorter day (non-financial benefit). Also, many factors contribute to improving your 6-week in-calf rate, not just better heat detection.



A pain point at Owl Farm, Waikato, was break-fencing crops. Here the Halter virtual fencing collars are used to remotely manage the cows.

To ensure it's worth it, ask these key questions:

- **Will the technology also make you more money and/or save you money?**
- **Should you buy or rent the technology?**
Subscription rather than outright purchase can reduce upfront costs, keep the technology updated, maintain the provider/farmer relationship, and provide an opt-out option (note though, subscription rates can go up and are often dearer than buying outright).
- **Do the provider's claims on the tech's benefits stand up to scrutiny?**
Always check your return on investment (ROI) against a range of potential performance outcomes and milk prices.

Engaging with a rural professional or an experienced farmer will help you identify a realistic ROI for your farm.

The best solution

Technology will be key to the future of farming, reducing work hours and physical effort, supporting timely and astute decision-making, and creating a more attractive career at all levels. However, technologies are only one part of the picture when it comes to upping your farming game. Make sure you identify the other things you also need to work on first, so your investment in technology rests on a strong foundation.

TALKING DAIRY

DairyNZ

Listen in

To find out how to choose the right technology and get the most from your investment, listen to *Talking Dairy* podcast episode #22: 'Technology and data in dairy farming' — visit dairynz.co.nz/podcast

COLLARING DATA TO IMPROVE PASTURE MANAGEMENT



Can we leverage animal sensor data to help with grazing management decisions? DairyNZ senior scientist Paul Edwards shares a recent study's insights.

Grazed pasture is the major source of feed in our dairy systems. However, pasture growth is highly dependent on climate and soil conditions, so it can be a challenging resource to manage. It's unsurprising then that pasture management has been identified as a key skill for a profitable and successful dairy business.

Decisions, decisions ...

At a high level, we use strategic levers like stocking rate and calving date to match animal requirements with seasonable variability in pasture availability. But supply and demand cannot be matched exactly, and rarely does pasture growth rate conform to monthly averages. Hence the need to fine-tune supply and demand through adjusting rotation length to build/mine pasture cover (buffering), conserving pasture as silage, and/or feeding supplements.

At a daily level this requires decisions on:

- the area of pasture to allocate to the herd
- how much pasture to conserve as silage (or supplement to feed).

These decisions often rely heavily on intuition acquired over previous seasons and, for some, real-time knowledge of animal requirements, pasture growth rate or current pasture availability.

Animal dry matter requirements can also be challenging to calculate because pasture quality is often unknown. Knowledge of pasture availability also requires regular pasture monitoring – and that's time-consuming and/or expensive to acquire.

A sense-ible alternative

There's increasing investment being made in animal sensors (e.g., collars or tags) to identify oestrus and monitor animal health. These devices could provide an untapped opportunity to gather objective, automatically captured, and near real-time information about pasture management and availability.

To investigate this opportunity we set up an experiment*, outlined on page 13, to determine the relationship between daily feed allocation, post-grazing residual and apparent pasture intake (pre minus post) and behaviour classifications reported by animal sensors.

What we did

The experiment consisted of two 20-day experimental stages, one in November 2021 and the other in late February/early March 2022.

- There were 100 cows divided into four herds of 25 cows.
- Each cow had five sensors, a collar (with two sensors), an ear tag, a rumen bolus, and a pedometer.
- Each experimental stage was broken into four five-day pasture allocation periods with different pasture allocations – *Figure 1* and *Figure 2*.
- In two herds, these allocations were achieved by changing the area offered; in the other two, it was via changing pre-grazing cover ($\pm 200\text{-}300\text{kg DM/ha}$) – *Figure 2*.
- Herds were on 24-hour grazing and offered a fresh allocation after the morning milking.
- Pasture cover was measured with a calibrated rising plate meter every two to three hours until dusk.

To accompany this experiment, we collected grazing management data on several commercial farms that already had animal sensors.

Figure 1. Experimental design
(4 x 5-day allocation periods)

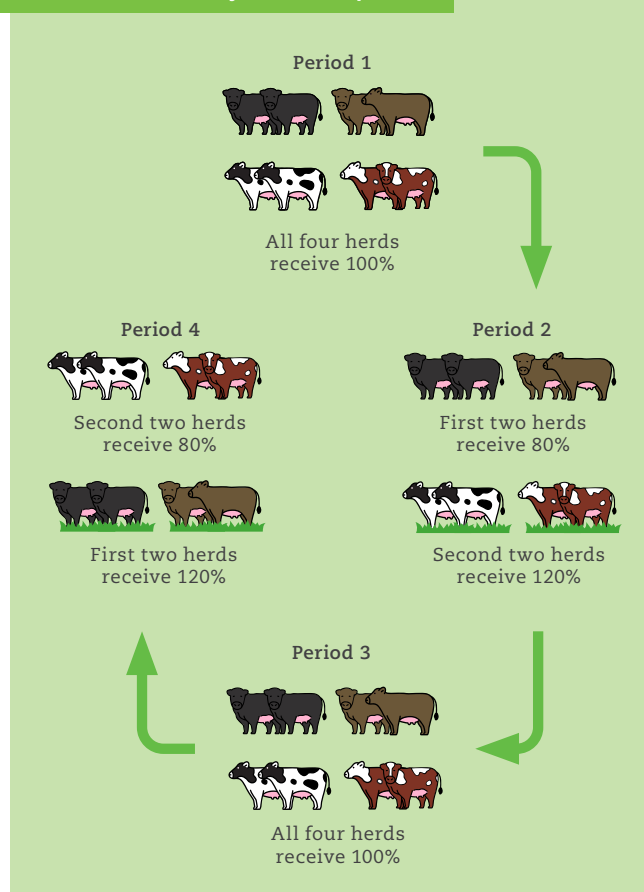


Figure 2. Visual differences in pre- and post-grazing pasture mass offered in the 80% and 120% allocation periods 2 and 4



What we've found so far

The experiment has produced a large volume of data that will take some time to process. However, some early insights are noted below.

- The best predicted pasture metric was post-grazing residual (kg DM/ha), with the best performing devices explaining 50-60% of the variability in values using a combination of behaviours (e.g., rumination, activity, eating).
- Rumination time was the best single predictor of pasture allocation, being responsible for about 35-40% of the variability in pasture metrics.
- Where there were multiple devices reporting the same behaviour (e.g., rumination time), they were not always closely aligned (measuring different things). However, this didn't mean any one device was better or worse for prediction than the others.
- Eating time was not that useful as a predictor, being responsible for only 5-10% of the variability in pasture metrics.
- Pasture 'disappearance' (pre- minus post-grazing) was poorly predicted.

Where to from here

Next steps will include exploring other pasture metrics such as categorisations (like high/medium/low or more/same/less). These may be easier to predict than exact values, while still offering value for pasture management. We will also retrospectively apply these predictions to the commercial farm data to assess performance in a less controlled environment.



*This is part of a joint DairyNZ, AgResearch and Fonterra project within AgResearch's NZBIDA (New Zealand Bioeconomy in the Digital Age) project. Details at agresearch.co.nz/nzbida



Steph and Andy Gudgeon were herd-owning sharemilkers for 12 years before buying their first farm in 2019.

Each issue, we ask one farmer to tell us what’s on their mind. This time, it’s Waikato farm owner Stephanie Gudgeon, who’s been thinking about changing tack to achieve future goals.

After returning recently from an energising few days attending DairyNZ’s Mark and Measure course in Queenstown, my husband and I realised we’d hit our 10-year goal of moving from sharemilking into farm ownership.

I get the feeling the next 10 years may not see our goals achieved with the same momentum. Our goals have always been simple and remain the same: to generate free time to pursue other interests and free cash to grow our business. Our actions needed to achieve them may look different to what we’ve done until now.

Our key focus areas are reaching pasture potential of 15t DM/ha, achieving 400kg MS/cow in an all-grass system, smashing \$1.50 debt/kg MS, and hitting return on assets (ROA) above 8%. The means in which we run our business may also look different in the future. There’ll be the same planning and emphasis on profit, but a wider scope of agribusiness could come into play. For us, it could mean diversifying to include renewable energy, utilising beef and reducing cow numbers, integrating technology to ease labour, getting a serious grip on the rising costs, and increasing efficiency of our grass-based business.

“**We must build our farming enterprises to be stronger in any future landscape.**”

We’re not 100% sure how the next 10 years are going to look, but one thing is certain: we must build our farming enterprises to be stronger in any future landscape. We need ideas, experience and knowledge stored away to change tack when an opportunity comes our way.

Therefore, I believe that moving our farming business into the future to achieve growth and profitability starts now, by:

- ensuring efficiency with cows and grass – monitoring our target towards 15t DM/ha
- engaging a certified nutrient adviser to reduce fertiliser, and model to explore outcomes
- establishing crops using no tillage and direct drilling; reducing summer feed costs by growing turnips; rolling forward half of the grass locked up for silage by using deferred grazing
- identifying discretionary business spending using zero-budgeting, to identify costs that creep into the system, and we’ll only spend when there’s a justified benefit
- being proficient with numbers, investing time into cost and profitability analysis monitoring towards ROA above 8%
- protecting the relationships with our bank, suppliers and staff, because relationships give context to what we do and secure future supply
- keeping abreast of new research and making submissions when asked by our industry bodies – this advocacy takes time and builds knowledge to utilise when the going gets tough
- nourishing and caring for our family by giving our children our free and undivided time, and taking time for daily self-care.

That’s us, but how do you see your business adapting to the new normal and where do you want to be 10 years from now?

WINTERING WELL TILL WINTER'S END

Farmers Ewen Mathieson and Ben Tosswill are working hard to protect their stock and the environment in harsh conditions by wintering well.

To help farmers get ahead of the risk of rain, strong winds and snow, Southland dairy farmer Ewen and Hawke's Bay sheep farmer Ben are sharing their experiences of managing winter grazing.

Speaking on DairyNZ's *Talking Dairy* podcast, they agree that planning ahead, developing contingency plans and carrying out daily checks are key to wintering well.

"Having a wintering plan helps identify risks like slopes, water sources and different soil types, which helps us to plan our winter grazing to reduce the risk of contaminant and sediment runoff," says Ewen.

"Planning allows us to think through the different scenarios that could occur over winter and prepare for them. It helps reduce stress and allows you to get a better night's sleep," adds Ben.

Ewen has developed small sawdust pads on his farm to provide cows with a comfortable space to move to and lie on in bad weather.

"Cows need to be able to lie down while they are digesting feed. They need to express their natural behaviours and lying is an important part of this," explains Ewen.

"With the new regulations coming in next winter, North Island farmers also need to have a wintering plan and understand how practices affect the environment. We developed our plan for this year and are still learning about our impact," says Ben.

Ewen says a particular focus on his farm is checking animals regularly.

"This helps us catch issues early so that small issues don't escalate into bigger problems."

Tony Finch, DairyNZ's head of the South Island, says farmers need to keep their focus on caring for stock right to the end of winter.

"Daily checks on the weather forecast, paddock conditions and cows are all vital to protect your herd. You can use the 'gumboot test' to check the ground is suitable for cows to lie on. Planning ahead is also key to ensuring cows don't calve on mud.

"As calving date approaches, those checks on animals should be happening even more frequently, so you can shed out springing cows to minimise any risks of cows calving early on crops."

Tony says it's not too late for farmers to develop a contingency plan (using DairyNZ's template) for adverse weather events.

"If you do have a Plan B, check your team understands when to action it."

Listen to the wintering podcast at dairynz.co.nz/podcast

Access the gumboot test and other wintering advice at dairynz.co.nz/wintering



Riverton farm owners Ewen and Diane Mathieson.

WINTERING THEN AND NOW

We've come a long way with how we winter stock. Here's a quick look at how the focus has shifted over the years as farmers have adapted previous practices and adopted new practices to drive more profitable farms, better outcomes for animals, and reduced environmental impacts.

1990s

Growing the most crop DM at the lowest cost

Low levels of accuracy with feed allocation

Herd-level metrics for BCS

Cows and farmers having a winter holiday

High use of graziers

Animal welfare considered

2000s

Importance of crop utilisation and quality, not just DM offered

Increased precision of feed allocation

Herd-level metrics for BCS

Cows and farmers having a winter holiday

Owners wanting more control, and formal grazing contracts evolving

Animal welfare considered



Successful wintering systems require thought and planning. Find all the wintering resources and tools you need at dairynz.co.nz/wintering



2010s

Importance of crop utilisation and quality, not just DM offered

Increased precision of feed allocation

Animal-level metrics to achieve pre-calving BCS

Summer holidays for many farmers now, and staff upskilled to manage increasing complexity

Owners wanting more control, and formal grazing contracts evolving

Animal welfare focus

Emergence of fodder beet – transitioning critical

Crop paddock selection & planning

Critical source area protection

Buffer strips

Biosecurity

Catch crops

Good management practice guidelines

NOW

Importance of crop type, utilisation and quality, not just DM offered

Increased precision of feed allocation

Animal-level metrics to achieve pre-calving BCS

Summer holidays for many farmers now, and staff upskilled to manage increasing complexity

Owners wanting more control, and shared responsibilities with graziers

Animal sentience

Optimisation of fodder beet – transitioning and diet balance critical

Crop paddock selection & planning

Critical source area protection

Buffer strips

Biosecurity

Catch crops

Good management practice guidelines

Minimising mud to achieve lying time targets

Contingency plans

Market access

Consumer expectations



My life in science: Dr David McCall

In the first of a new series about DairyNZ scientists past and present, we talk to recently retired Dr David McCall.

Q What influenced your decision to become a scientist?

A My interest in science was piqued by Mr Samson, my science teacher at Gore High School. He was a snappy dresser with the kind of moustache that commanded attention. He made science interesting and that awakened my curiosity.

Agriculture was a passion and I attended Lincoln University, where I did an Ag Science degree. In my fourth year I was coming up to the Waikato for a wedding and the MAF careers scout organised a visit to Ruakura. I met Dr John Hutton, then director of Agricultural Research, who suggested a visit to the Whatawhata Hill Country Research Station, west of Hamilton. I spent half a day there, after which Dr Hutton offered me a job as a

scientist as long as I got a First Class Honours degree. So, that's what I did.

Q What was your first job in science?

A When I finished my degree, I started work at Whatawhata, studying sheep nutrition and farm systems.

Q What big projects have you worked on and what are you most proud of?

A I did my PhD at Massey on farm systems modelling. Back then, applying computer modelling to study farm systems was pioneering. I went back to Whatawhata to see if the reality matched the modelling. This culminated in the development of a farm systems model, which formed the basis of the Farmax platform still going strong today.



“When farmers understand the knowledge gained from good science, they're often the ones to come up with the practical solutions.”

Q How's your work benefited farmers?

A Modelling work provides clarity to enable both scientists and farmers to better understand farm systems and, from that, to make system improvements. It's not just about scientists beavering away in the back room – farmers have plenty of great ideas too. When farmers understand the knowledge gained from good science, they're often the ones to come up with the practical solutions.

Q What dairy research would you like to see tackled in the next five years?

A The formation and development of new farm systems that not only achieve environmental objectives but also profit. I think we need a fundamental rethink about how we redesign farming in the northern North Island because of climate pressures on forages, and environmental issues, plus the cost of extending lactation with feeding in dry autumns. Similarly, we have to be open-minded about how we winter in the South Island. We need to find solutions that care for animals and soil but don't cost the earth. Research into this will get underway at the Southern Dairy Hub in 2023.

David worked at DairyNZ for 15 years and, prior to retiring in May, was general manager of new systems and competitiveness.

TAKE 5

Tips for farmers

1.



Celebrate success

Give yourself and the team something to look forward to by planning an end-of-calving celebration.

It doesn't have to be a major – just something to say 'thanks' and recognise all the hard work.

2.



Critical decisions

Now's the time to make key cultivation decisions for winter 2023, and that includes leaving critical source areas unsprayed and uncultivated. Leaving a minimum of a 5m grass buffer strip creates a filter and slows down water movement, so it can soak into the soil rather than running off. More tips at dairynz.co.nz/wintering

3.



Keep counting

After balance date, the feed wedge is one of your best tools to help manage pasture. A visual ranking of paddocks from highest to lowest pasture cover allows you to manage a surplus or deficit (e.g., when/if to shut paddocks for silage). Go to dairynz.co.nz/feedwedge

4.



Working smarter, not harder

Does your team consistently work more than 50 hours a week, more than six days straight, or have fewer than three days off each fortnight? If so, it might be time to shape up by reassessing your roster and systems to reduce hours, risk of fatigue and potential accidents. Get help at dairynz.co.nz/rosters

5.



Justifying the cost

Before investing in a new farm technology, ask yourself:

- Will the technology make me more money and/or save me money?
- Will it make the job easier for me?
- Should I buy or rent the technology?
- Do the provider's claims on the tech's benefits stand up to scrutiny?

Check out pages 10-11 for more advice.

FINE-TUNING FODDER BEET



It's important to know what you're feeding and how you're feeding it, writes DairyNZ scientist Roshean Woods

Fodder beet offers many benefits as an alternative crop to brassicas in your rotation, with less impact on the environment and greater flexibility of use. However, it also presents some nutritional risks that require careful management and attention to detail.

Fodder beet is a unique feed, different from most feeds we offer dairy cows. This is primarily due to the bulb's high soluble sugar content (65-75% of dry matter; DM), low crude protein (7-12% of DM) and phosphorus content (0.08-0.2% of DM). Fodder beet bulb typically makes up 75-90% of the crop's DM.

When offering diets containing fodder beet, it's important to ensure you're supplying your animals with sufficient nutrition, particularly when fodder beet makes up a large proportion of the diet. Inadequate nutrition can negatively affect animal health and performance, including delayed initiation of lactation, reduced peak milk production, inefficient rumen function, reduced growth and development of youngstock, and increased incidences of metabolic disease and acidosis. As such, it's important to know what you're feeding.



Yielding, transitioning, and testing

To accurately allocate feed, make sure you yield your crop two to three weeks prior to feeding. Yield the leaf and the bulb separately so you can determine the proportion of each. It's also important to accurately allocate supplementary feeds, for example, by knowing DM content and bale weights, or having scales on your silage wagon.

Transition your cows onto fodder beet crops gradually and follow the recommendation of increasing allocation by no more than 1kg every second day for mature cows, up to their full allocation. This allows the animals' rumen microbes to adapt to the change in feed type, particularly the bulb's high sugar content. A careful transition helps to prevent acidosis and other diseases, such as liver dysfunction and deferred ketosis. Check out our recommendations for transitioning at dairynz.co.nz/fodder-beet-transitioning

We advise you **not** to use published nutritional values for fodder beet. Instead, test your own leaf and bulb, and supplementary feeds, through a commercial lab. Why? Because research has identified considerable variation in the nutritional profiles of fodder beet's leaf and bulb. Leaf and bulb also have very different nutritional profiles, and the relative proportion of each changes significantly during the growing and feeding phases: from a high of 35% leaf in autumn to a low of 10% in late winter, depending on climatic conditions.

Using DairyNZ's FeedChecker tool (dairynz.co.nz/fodder-beet) is a robust way to check your diets before feeding, to identify any potential nutritional imbalances. FeedChecker has recently been updated with improved input options. You can now enter your leaf and bulb feed test results as custom feeds, and include the DM content, leaf percentage, bulb percentage, and utilisation. Other new features include a section to help with crop allocation and break size calculations.

If in doubt about feeding fodder beet, talk to your vet or nutritionist.

Calving-time care

As cows approach calving, their demand for metabolisable protein increases to support increased foetal growth and to develop mammary tissue. This usually happens in mid- to late winter and often coincides with a decline in protein intake, as the crop on offer has a higher proportion (up to 90%) of low-protein bulbs. It's important to ensure you're offering sufficient protein in late pregnancy by either transitioning cows off fodder beet four weeks pre-calving, or offering a higher-protein supplement or pasture alongside the fodder beet.

In-calf dairy cows on these low-protein bulb-dominant fodder beet crops often bag up closer to calving than those on grass or kale, increasing the risk of calving on crop. Here are some simple ways to reduce this risk:

- Early pregnancy scan to accurately date pregnancies for drafting cows off crop into the springer mob.
- Understand the implications of bull gestation length on expected calving date.
- Don't rely solely on visual appearance of the udder for springer drafting.

Key points

- Fodder beet has many benefits, but known nutritional risks require careful management.
- Fodder beet should be fed with an appropriate supplement or pasture.
- Test feeds to ensure you're supplying sufficient nutrition.
- Take particular care with cows eating fodder beet in late gestation.

Fodder beet benefits

Despite the risks outlined in this article, there are many good reasons to consider using fodder beet:

- High energy is great for putting body condition on cows.
- Higher yield potential means you can use a smaller area for winter grazing, compared with brassicas.
- Great option for soils with brassica disease.
- Can be grazed in the paddock, or lifted and stored.
- Reduced nitrate leaching risk compared to kale, due to the bulb's low protein content.
- Cows on fodder beet emit less methane than when on kale or pasture.

SUPPLEMENTARY ADVICE



As mating approaches, it's time to consider the cost of supplements and the time spent feeding them out – time that might be better spent on heat detection.

Can cows get in calf on a pasture-only diet?

Yes. If there's adequate feed, such as pasture residuals of 1500-1600kg DM/ha and good pasture allocation, there are no reproductive benefits from feeding additional supplements.

Also, if intakes are restricted during the mating period (due to a feed deficit, prolonged adverse weather or poor pasture utilisation) then reduced reproduction is likely to be less than expected.

Can I take out supplements during mating?

Yes, if energy supplied by pasture is adequate. Past research shows there's no impact on submission, conception, 6-week in-calf or final pregnancy rates when dietary supplements are removed just before mating.

Isn't nutrition the main factor affecting reproduction?

No, it's only one factor. Others are genetics, bull management, heat detection, cow health, calving pattern, heifer management, non-cyclers, and cow condition at calving and mating.

Does body condition score affect reproduction?

BCS at mating is a key driver of cow cycling and the 6-week in-calf rate. This is largely set by BCS at calving (so aim for targets of 5.5 for two- and three-year-olds and 5.0 for older cows). Cows naturally lose body condition after calving, based on genetics and BCS at calving.

Providing additional feed would have little effect on reducing this loss. Instead, focus on achieving target grazing residuals so there's good quality pasture available during mating.

So, what's the best decision?

It's up to you to decide whether the cost (including time and labour) involved in feeding out supplements is justified by need and any benefits.

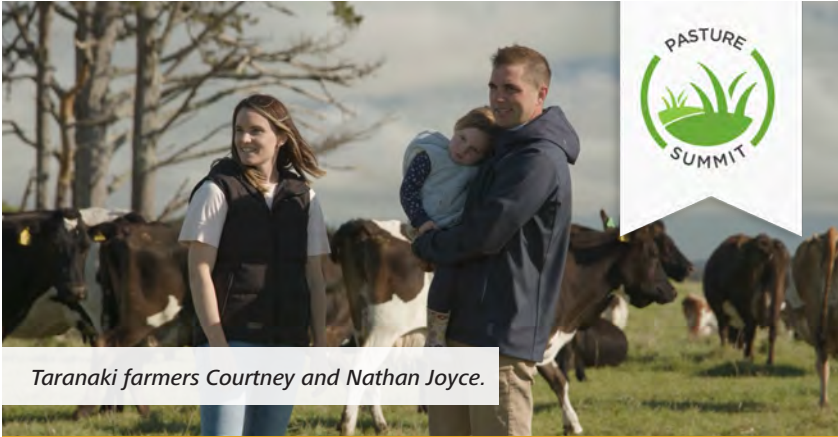
If you do decide to use supplements, it doesn't matter what kind: it's the megajoules of metabolisable energy per kilogram of dry matter (MJME/kg DM), and the cost, that count.

Key points

1. Save your time and money: if there is enough pasture, pasture is enough.
2. In most cases, you'll only need to feed supplements if there is a deficit in early lactation.
3. Choose supplements based on cents/MJ ME – focus on feed energy, not type of feed.

Where can I get more info?

See dairynz.co.nz/supplements
The information in this article was sourced from our *Feeding cows in spring* booklet at dairynz.co.nz/publications/feed



Taranaki farmers Courtney and Nathan Joyce.

Pasture Summit: Spring Field Days

Two farmer-hosted field days, one in each island, will provide an opportunity to share and discuss fresh ideas for achieving profitable food production from grass.

Head along for:

- an overview of each farm, and its KPIs relating to financials, pasture and cow, as well as performance benchmarks relative to the region
- a reflection on how to get the best from your team, and strategies for coping with staff shortages
- a look at live examples of pathways for equity growth
- a discussion around water and greenhouse gas strategies and measures.

NORTH ISLAND: Nathan & Courtney Joyce's farm in Taranaki on Tuesday, September 27, 2022

SOUTH ISLAND: Daniel & Emily Woolsey's farm in Southland on Wednesday, October 19, 2022

Visit pasturesummit.co.nz

Farmer leaders invited to join DairyNZ's Board

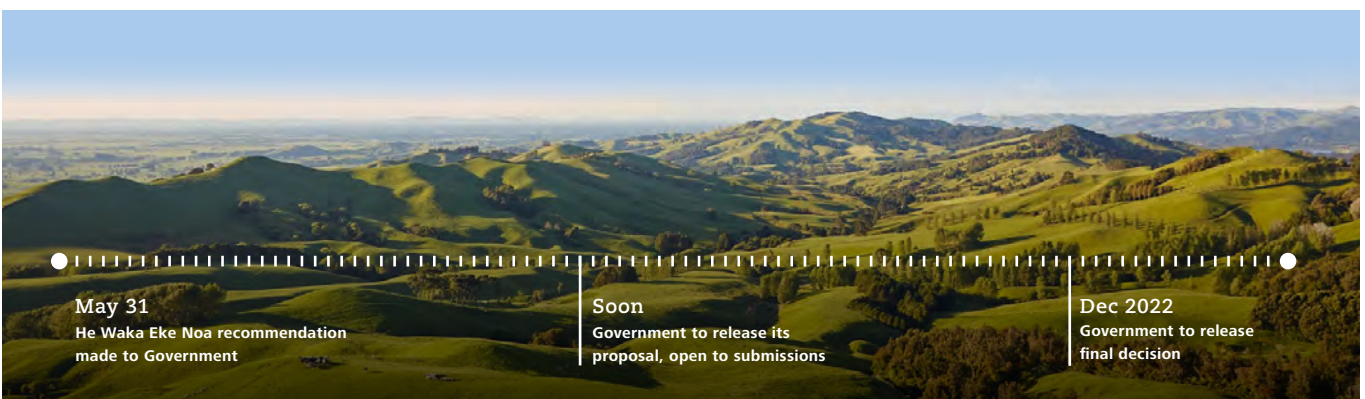
Want to help set the direction of and contribute value to the dairy sector? DairyNZ levy-paying farmers are invited to apply to join the organisation's Board of Directors. Two farmer-elected positions are available, and nominations are open from Monday, August 9 until noon on Monday, September 5.

Ideally, candidates will have:

- an understanding of farm systems, research and development, policy and advocacy
- an interest in progressing DairyNZ's strategy
- good networks in the dairy sector
- strong commercial skills, and financial, governance and strategic expertise.

There will also be a second election for one member of DairyNZ's Directors' Remuneration Committee.

Visit dairynz.co.nz/agm for more information.



May 31
He Waka Eke Noa recommendation made to Government

Soon
Government to release its proposal, open to submissions

Dec 2022
Government to release final decision

What's next with He Waka Eke Noa?

Keep an eye out for when the Government releases its proposal on agricultural emissions pricing. This proposal is open for consultation from the public (including farmers) before the Government releases its final decision in December.

DairyNZ will keep you updated on what the Government's proposal looks like and whether it differs from the partnership's recommendations. We'll be making a submission, and we encourage you to have your say again. For details on how to make a submission, visit dairynz.co.nz/hwen



The cow being ridden by a herd mate in this photo is a clear indication of her being in oestrus.

Oestrus, genetics and wearables

We look at the importance of oestrous (heat) expression, and whether data gathered through cow collars and tags will help accelerate genetic gain in fertility for improving herd reproductive performance.



Chris Burke
Senior scientist,
DairyNZ



Charlotte Reed
Scientist,
DairyNZ



Susanne Meier
Senior scientist,
DairyNZ

Improved genetics for fertility

According to NZAEL, selective breeding delivers replacement dairy cows that are \$11 more profitable (per cow) with each new generation. Genetic merit for fertility is one of several contributors to this annual gain. The measures currently used, calving and artificial breeding information, are cheap and easy to measure. However, heritability is low¹, meaning that progress on improving fertility through a selection approach is slow, compared with other more heritable traits such as milk production. Selection for fertility cannot be overlooked, however, and opportunities exist to improve the gains that can be made.

Can animal evaluation include selection for improved oestrous expression?

In high-yielding dairy systems, there's a pronounced decline in oestrous expression as milk production increases², making heat detection more difficult and cows harder to get back in calf^{3,4}. The heritabilities of oestrous length and strength are reported to be less than 10%⁵. This is consistent with the general observation that fertility is a traditionally difficult trait in which to make rapid gains through genetic evaluation. That's not because there is a lack of genetic variation in the traits driving mating and calving outcomes. It's because fertility success can be affected by a high number of other factors, even with the most accurate herd recording⁵.

Key points

- A longer and stronger oestrus is more easily detected.
- Longer and stronger oestrus is more likely in cows with positive genetic merit for fertility.
- Activity-based sensor technology like wearable cow collars and tags provide a reliable and objective measure of oestrous expression.
- These 'wearables' can also inform other traits of interest relevant to genetic selection decisions (for example, the timing of oestrus after calving).

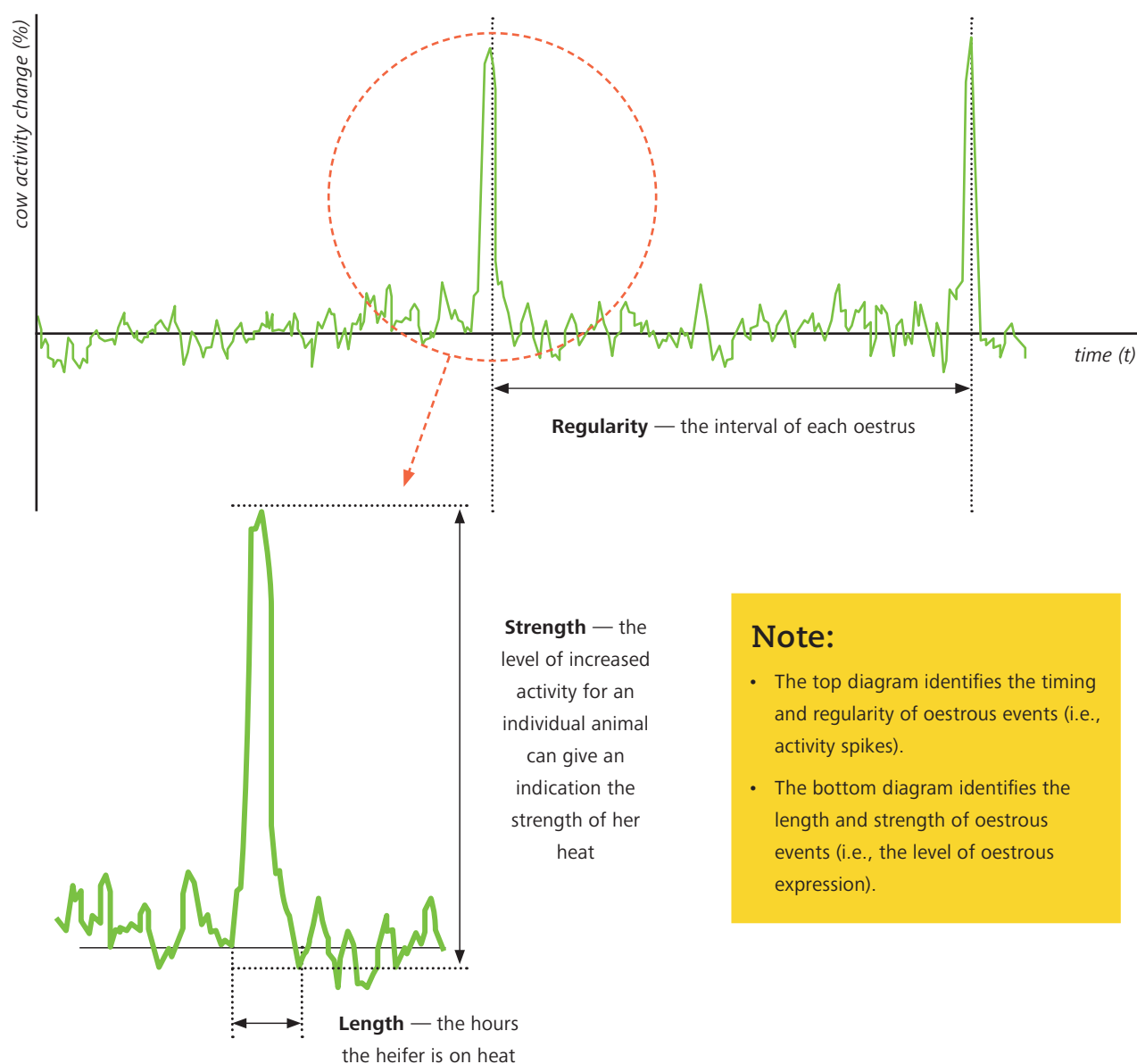
Reported estimates of heritability for fertility traits can be wide-ranging. For example, the literature says that the heritability of age at puberty in cows ranges from 9% to 56%. A previous estimate for New Zealand-type dairy cows was at the low range of just 9%⁶. Our own recent studies, however, have been able to achieve a robust heritability estimate of 34%⁷, similar to that for milk production traits. Advances in genetic evaluation methods and greater accuracy in recording these traits may help explain this improved outcome.

Oestrous expression and detection are critical

Achieving a high level of reproductive performance during artificial breeding (AB) requires an equally high standard of oestrous detection performance. A review of the science and art of detecting oestrus reported previously⁸ noted the following core elements:

- Oestrus is the sign that the cow is about to ovulate and is ready for insemination.
- The two most common errors people make are missing heats and putting up cows for AB when they're not in heat.
- Stressed cows don't have strong, easily detected heats.
- Put processes in place so people don't experience 'oestrous detection fatigue', as heat detection errors are costly on herd reproductive performance.

Figure 1. Schematic of change in cow activity over of period of about six weeks



Note:

- The top diagram identifies the timing and regularity of oestrous events (i.e., activity spikes).
- The bottom diagram identifies the length and strength of oestrous events (i.e., the level of oestrous expression).

Oestrus is longer and stronger in cows with high genetic merit for fertility

In comparing cows with either positive (+5 Fertility BV/Breeding Value) or negative (-5 Fertility BV) genetic merit for fertility, activity collars worn by cows identified more than 2100 oestrous events (Figure 1⁹). The average duration of oestrus in the positive-Fertility BV cows was about 13 hours, compared with 11 hours in negative-Fertility BV cows. Intensity of oestrus during these times was also greater in those with positive genetic merit for fertility⁹. Oestrous expression is a distinguishing feature between cows with high and low genetic merit for fertility.

An evaluation of whether these oestrous measures have potential for selective breeding is currently underway in DairyNZ 'scale-up' trials involving 5000 animals. A key requirement is large-scale accurate data, which was gathered using pedometers on a subset of 2000 of these animals. While the data is yet to be fully analysed, we've demonstrated that this technology can be deployed at scale. The behaviours relevant to describing oestrus for genetic evaluation purposes will come from this type of information.

Timing of oestrus is also important

In addition to assessing the length and strength of oestrus, wearables can also be used to determine the timing of oestrous events. Two typical examples are when puberty is reached; and when cows begin having oestrous cycles after calving. Both are novel fertility traits with potential to add value as predictors of genetic merit for fertility. The scale-up studies described above will pave the way towards assessing and developing the use of these traits. Age at puberty is likely to be more valuable as a predictor because it can be measured earlier in the animals' lives, and it has a higher heritability than most fertility-related traits. This enables an earlier accuracy for sire evaluation and greater confidence in the use of younger, genetically superior sires.

The time from calving to first oestrus is a heritable trait (about 12%) and slightly greater than reported for most fertility traits^{5,10}. Cows that have prolonged intervals (longer than six weeks) between calving and first oestrus are a major source of infertility in our pasture-based, seasonal dairy system. While pre-mating cycling rates are largely influenced by management factors, there is a genetic component to these intervals that could be further investigated. The most obvious goal would be to prevent any gene flow linked with a prolonged noncycling issue, by using measures captured during the early stage of first lactation.

Future opportunities – a place for 'wearables' technology

The availability and use of on-farm wearables technology are increasing. Remote monitoring technologies offer a richer, more objective, and effective way to measure the behaviours, health and wellbeing of all cows.

Wearables for oestrous detection are relevant to farm management, while also offering value at a sector level. Obtaining objective measures of oestrous expression traits might enable us to select animals that demonstrate an enhanced expression of oestrus. Information on when and how often oestrus occurs would also be valuable. The critical requirement is to share the data collected from routinely used wearables for sector-wide benefit, for example, for genetic improvement.

Acknowledgements

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FROM GRAD TO GREAT

Young dairy farmers are hitting the ground running thanks to a new graduate training programme in Canterbury.

When Tony Dodunski visited a Lincoln University careers expo last year, he spotted a gap in the training market.

"Many individual businesses and professions offer graduates something the general dairy industry doesn't — and that's a graduate training programme."

Tony and others set about plugging the gap by developing the Grassroots Dairy Management Training Programme with a network of highly regarded farmers and industry professionals.

"Our aim is to attract bright graduates to the dairy sector, help fast-track them to management and decision-making positions, and provide them with skills and support to become successful," says Tony, who owns 219ha Beaumaris Dairies near Te Waihora/Lake Ellesmere.

Graduates are employed under normal employment agreements, with competitive salaries and on-farm accommodation. During that time, they're paid to attend weekly training modules. Five farmers have taken on graduates so far.

One graduate taking part is Peter O'Connor (24), who's farm manager this season for sharemilkers Steven and Rosie Ketter, after being 2IC for their contract milking business last season.

Peter says he's loving the programme.

"It's a great way to build knowledge on subjects you're not 100% sure about and to be able to discuss

them with the experienced farmers who support the programme.

"It's great to learn and socialise with like-minded people."

"I look forward to Wednesdays, when we do our training modules. There are 25 of them and they cover everything from people management skills to financial planning, pasture management, and how to use software like LIC's MINDA. Then there's the social aspect: there are five of us on the programme and it's great to learn and socialise with like-minded people," says Peter.

The farmer-led programme is in its pilot phase and will be extended to 10 graduates next year.

"So far, it's available to graduates living in Canterbury, but we'll look at rolling it out to other parts of the country in future. But in the meantime, we'd like to hear from any students who might be interested in doing the programme," says Tony.

He added that DairyNZ has been instrumental to the pilot's success, helping to fund branded clothing for the graduates, and some of the module presenters.

Keen to learn more? Head to dairygrads.co.nz



Peter O'Connor, NZDIA Dairy Trainee of the Year, is one of five graduates in the programme.



Feature update



Northland

With Northland farm systems at the forefront of the effects of a warming climate, it's important to test whether strategies to reduce emissions are physically and financially sustainable. As such, a comparison is underway to compare three farm systems that may be used in future.

While there are three more years of this study to run, first-year results showed little difference in profitability between a Kikuyu/Italian ryegrass-based farm and a farm that had 74% of pasture sown with tall fescue and/or cocksfoot pastures, despite these alternative species pastures having variable establishment success.

This project, Future Dairy Farm Systems for Northland, is partly funded by dairy farmers through the DairyNZ levy. See full first-year results on the Northland Dairy Development Trust website: nddt.nz/news

Waikato

Your local DairyNZ regional team invites you to take a break after calving and connect with farmers in your district at one of our complimentary breakfast events. Find details on a 'Breakfast on us' near you in August and September – visit dairynz.co.nz/events

Bay of Plenty

What are your farm focus areas this mating? Decision-makers are encouraged to attend DairyNZ events coming to the Bay of Plenty region this September. We'll help you unpack and analyse what can be learned from 2021 mating results, and calving results from this July and August, to start the process of improvement for this mating.

Taranaki

If you're chewing over some questions about autumn calving, our local team is keen to support you and provide some answers. We'll be running a group this August that allows you to see how other farmers are getting on with this system. If interested, contact DairyNZ extension partner Ashley Primrose on 021 246 5663 or ashley.primrose@dairynz.co.nz



Lower North Island

What is a Spring Rotation Planner and how can it support your pasture management? Grazing management during and after calving largely determines your production to Christmas and how well the cows are fed at mating. Visit dairynz.co.nz/SRP to find out how this tool can guide you on managing your pasture through calving. Alternatively, contact your local regional team if you have any questions – see **page 29** or go to dairynz.co.nz/teams

West Coast / Canterbury / North Otago

Our Canterbury regional team is excited to welcome two new extension partners: Nicola Blowey and Hamish Lambeth.

Having grown up on dairy farms in the Waikato and North Canterbury, Hamish is passionate about helping farmers in the dairy sector, and completed his Bachelor of Agricultural Science locally at Lincoln University.

Nicola has spent the past six years as a farm assistant and contract milker in Fairlie, and is involved in a variety of Canterbury farming groups.

Look out for Hamish and Nicola at DairyNZ events locally, or get in touch directly:

Hamish on **027 290 5988**,
Nicola on **027 180 04721**.



*Hamish Lambeth,
extension partner*



*Nicole Blowey,
extension partner*

Southland / South Otago

Meet Darren Smith, the newest member of our Southland team. Darren's coming on board as a regional partner after a career in farm management, including experience in autonomous milking systems and in the dairy goat industry. Darren is excited to support and connect with farmers across Southland and South Otago. Get hold of him at **027 180 04717** or darren.smith@dairynz.co.nz



*Darren Smith,
regional partner*

DairyNZ contacts

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Clinton Hemana	Kaiārahi Ahuwhenua	027 1800 4505
Cheyenne Wilson	Māori Relationship Partner	027 1800 3793

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Extension Partner	Hamish Matthews	021 242 5719
Extension Partner	Stephen Ball	027 807 9686
Extension Partner	Mike Bramley	027 486 4344

Waikato North

Regional Leader	Wilma Foster	021 246 2147
Regional Partner	Kylie Brewer	027 1800 3156
Regional Partner	Andrew Allen	027 1800 3025
Extension Partner	Jaimee Morgan	021 245 8055
Extension Partner	Chris de Wet	027 1800 4410
Extension Partner	Kent Weston-Arnold	027 288 1244

Waikato South

Regional Leader	Brigitte Meier	027 448 3050
Regional Partner	Steve Canton	027 475 0918
Regional Partner	Debbie Young	027 1800 3786
Senior Extension Partner	Phil Irvine	027 483 9820
Senior Extension Partner	Frank Portegys	027 807 9685
Extension Partner	Denise Knop	027 513 7201

Bay of Plenty

Regional Leader	Mark Williams	027 1800 4222
Regional Partner	Kevin McKinley	027 288 8238
Senior Extension Partner	Ross Bishop	027 563 1785
Extension Partner	Chris Hurlston	021 225 8345

Taranaki

Regional Leader	Charlie McCaig	027 244 7915
Regional Partner	Gill Haenga	027 1800 3605
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

Regional Leader	Mark Laurence	027 704 5562
Regional Partner	Michelle Greaves	021 280 8405
Extension Partner	Janine Swansson	027 381 2025
Extension Partner	Francesca Bennett	027 702 3760

Upper South Island

Regional Leader	Tony Finch	027 706 6183
Regional Partner	Antoinette Archer	027 1800 3122
Regional Partner	Anna Hall	027 411 5663
Senior Extension Partner	Mark Shadwick	021 287 7057
Extension Partner	Heather Donaldson	027 593 4124
Extension Partner	Amy Chamberlain	027 243 0943
Extension Partner	Hamish Lambeth	027 290 5988
Extension Partner	Nicola Blowey	027 1800 4721

Southland/South Otago

Regional Leader	Guy Michaels	021 302 034
Regional Partner	Stuart Evans	027 393 0114
Regional Partner	Darren Smith	027 1800 4717
Senior Extension Partner	Nathan Nelson	021 225 6931
Extension Partner	Karen Duthie	027 358 7579
Still recruiting		

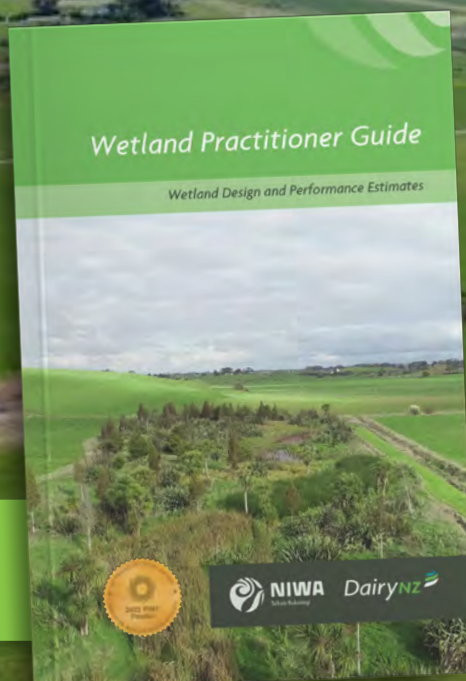
DairyNZ directors

Jim van der Poel	021 848 484
Elaine Cook	027 223 2049
Colin Glass	027 486 4064
Jacqueline Rowarth	027 694 4334
Peter Schuyt	027 557 4242
Tracy Brown	027 291 1716
Mary-Anne Macleod	021 923 332
Margaret Devlin	021 328 200

CHANNEL YOUR EFFORTS

Build a wetland for optimal water quality outcomes

- Get farm business benefits
- Support biodiversity and habitat
- Reduce nutrient/sediment loss
- Sustainably use less productive land



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