

Inside Dairy

June 2020

Your levy in action

Building confidence in 3-in-2 milking

4 steps to rolling a down cow

CALVING THROUGH COVID-19 →

DairyNZ



over the fence...

As we head into June, many of you will be managing the logistics of Moving Day and all that's involved with that this year.

Shifting home and farm is more complex than usual, but I thank you for following the Covid-19 guidelines right from the beginning of lockdown. If you haven't already, I encourage you to check out the Moving Day info on our website if you're preparing to shift now.

In April we advocated with the Government, alongside Federated Farmers, to gain clarity on Moving Day. We were pleased to see certainty provided so farmers could shift regardless of lockdown level.

Covid-19 has added some complexity for farm businesses, so if you need any support, please get in touch with our team. We're working closely with a range of organisations, on issues such as the feed shortages and meat processing capacity, disruptions to immigration and changes to tenancy services, and our regional teams can likely provide you with some information or solutions.

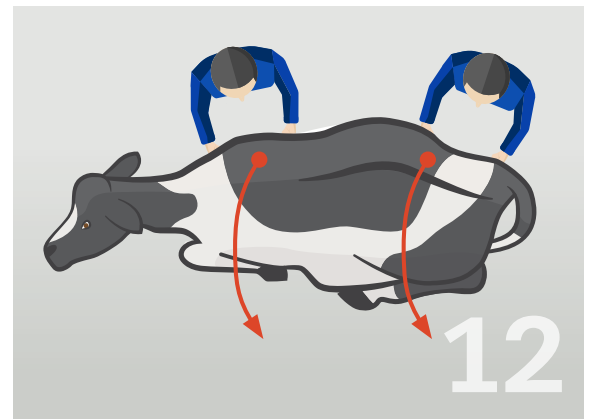
During April and May, we also had our milksolids levy vote. Voting will be closing as this hits your letterboxes, so keep an eye out for the outcome or visit dairynz.co.nz/vote. Thank you to all those who voted – it's a one-in-six-year opportunity to vote for the levy, which funds your industry-good organisation, DairyNZ.

This month's edition of *Inside Dairy* is focused on calving, and we also feature a new section, 'Technical Series: Science in action'. *Tech Series* has been around for a decade, as a quarterly magazine, showcasing our scientific research for farmers. We've been looking for ways to share our research with you more regularly, and have developed a new format for *Tech Series* within *Inside Dairy*, so you'll see these stories in each edition from now on.

Also, *Inside Dairy* is becoming a bi-monthly magazine (printed every two months) to reflect the increasing shift towards online readership. Although *Inside Dairy* remains a highly read publication, we want to use our time and resources to bring you more great reading content through our website. The next magazine you receive will be our August/September edition, all about spring feed management.

As always, please get in touch to discuss any of our work or issues you're facing. Email me at tim.mackle@ceo.dairynz.co.nz

Tim Mackle
Chief executive
DairyNZ



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In this month's Technical Series article, DairyNZ's Paul Edwards shares early results from a three-year study of flexible milking approaches.

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On the cover: Bay of Plenty farmer Bridie Virbickas' appreciation for her cows – and the livelihood they provide – extends to her calving season approach. Read all about it this month's lead story.

TAKE 5... TIPS FOR FARMERS

1. Covid-19 tip

Operate safely on-farm under Alert Level 2 through physical distancing and contact tracing. Record who is on farm (farm staff, visitors, contractors or delivery drivers), why and when, using your farm calendar or diary, phone texts/memos or via an app. For more information, see dairynz.co.nz/covid19



2. Update your NAIT

If you've moved stock recently, make sure you record the movements in NAIT, and check with your grazier that they're keeping their NAIT account up to date. Find out more at dairynz.co.nz/NAIT

3. Tick all 8

Farmers have made big improvements to ensure bobby calves are fit for transport. Two fitness factors need continued focus: contracted tendons and blind calves. To address these, follow our 'tick all eight to leave the gate' checklist at dairynz.co.nz/fit-for-transport



4. Riparian attention

Now, while the cows are dried off, is a good time to give last year's plantings a helping hand. Spray weeds and release plants to help them get established, free from smothering. For tips on plant maintenance, check out dairynz.co.nz/planting-waterways

5. Team training

Get set up for a smooth calving season by using our *Caring for calves* booklet. It has templates to complete with your farm team, with tailored instructions and reminders for how successful calving happens on your farm. Download your copy today at dairynz.co.nz/calves



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We appreciate your feedback

Email insidedairy@dairynz.co.nz or call us on 0800 4 DairyNZ (0800 4 324 7969). Alternatively, post to: Inside Dairy, Private Bag 3221, Hamilton 3240. For information on DairyNZ visit dairynz.co.nz.



Looking ahead from lockdown

While Covid-19 restrictions have had immediate effects on how many of us in the dairy sector operate and interact, we've been working closely with farmers and other sector partners on finding solutions to some of the longer-term ramifications.

Staff shortages on dairy farms

With national unemployment set to rise, DairyNZ, supported by Federated Farmers, is encouraging Kiwis to consider work on dairy farms in a new 'Go Dairy' career changer campaign, which includes entry-level training to help their transition to farming. Learn about the campaign at godairy.co.nz/career-changers

We're also working with Federated Farmers to protect our existing migrant workforce, including obtaining visa extensions and clarity from Immigration NZ for those employees out of the country when the borders closed.

Principal repayments

Current global uncertainty makes it hard to predict where milk price will land. Our business team has looked at scenarios based on different milk prices. The team says knowing your peak overdraft and principal repayment potential is key, and encourages farmers to get cashflow forecasts in place and discuss these with their banks. For more, visit dairynz.co.nz/principal

Challenging weather

With droughts, feed shortages, cull cow processing delays and the rapidly approaching winter season, we've worked with the Ministry for Primary Industries (MPI), Beef + Lamb New Zealand, and other sector partners to provide remote feed planning support and advice to farmers. We've also developed new online resources, *Steps towards a successful spring* and *How to achieve targets*. These resources give practical tips and tools, including feed budgeting, managing stock, reducing feed demand and increasing supply – available at dairynz.co.nz/covid19

Our Budget Case Study farmers around New Zealand have provided an update on how they're dealing with feed shortages and what decisions they're making. We've collated these at dairynz.co.nz/budget-case-studies

Staying connected


We ran more than 165 online events during Alert Levels 3 and 4, with large turnouts and positive feedback from farmers. Even when we're able to hold face-to-face events again, we'll be looking at ways to make the most of technology to build our connection with farmers and provide access to our experts.


Visit dairynz.co.nz/events to see what's happening near you, both digitally and face-to-face.


Moving safely on Moving Day


For those moving farms for the new season, we've developed new guidelines with support from Federated Farmers, Fonterra and FMG. These cover the planning and movement of people, animals and equipment, and managing contractors, administration and regulatory requirements in the Covid-19 environment. Available at dairynz.co.nz/movingday


Here are some of the things DairyNZ's done for farmers since the outbreak of Covid-19:


1. Joined forces with partners to lobby the Government to give early clarity about Moving Day, the visa status for our migrant workers, and tenancy services. 

2. Provided guidance on operating safely under different alert levels. 

3. Negotiated a retraining scheme with the Government to help keep unemployed New Zealanders get into dairying. 

4. Worked with meat processors to provide clear information on processing capacity. 

5. Provided online events and discussion groups. 

6. Worked with sector partners to provide feed management support. 

Stepping into a post-Covid world

Helping farmers increase profit and reduce their footprint is the aim of DairyNZ’s Step Change project, writes strategy and investment leader Jenny Jago.



The world has changed quickly – and our dairy sector is in a fortunate position to be working and providing food and export revenue for New Zealand. Through this, we remain committed to our Dairy Tomorrow strategy goal of striving for financially competitive businesses that take care of the environment, our animals and our people. This will hold us in good stead as we navigate through an uncertain time, ensuring we’re stronger and more resilient for the future, and enhancing our reputation for producing highly sustainable and nutritious food.

One of DairyNZ’s priority projects is ‘Step Change’, which we designed to help farmers achieve financial gains while making progress towards environmental goals, and be more able to adapt to pending regulations.

The overarching aim of Step Change, which commenced early last year, is to tackle three key areas: profitability, water quality and greenhouse gas emissions. Progress on these fronts will help ensure dairy farm businesses are fit for whatever else comes at us in the future, from people/customers, the climate and world events.

Funded by the levy, Step Change will help farmers understand the key farm system interactions to consider in driving their business towards overall financial and environmental sustainability.

Many farmers are currently facing challenges resulting from droughts, floods and Covid-19. Feed cost and supply decisions, in relation to milk price and cow numbers, will be top of mind for many farmers. Step Change sheds light on how these choices also have a wider impact on total farm business sustainability. By making these decisions via a whole-of-system approach, we’ll not only secure short-term strength, but in the longer-term, confidence for the future.

Early in the project, we defined the levers a farmer can use to improve both financial and environmental performance, and their key indicators. The main tactics we’ve identified are:

- making the most profitable use of your pasture
- optimising feed eaten to reduce methane
- reducing nitrate surplus and leaching
- managing marginal land
- reducing phosphorus, sediment and pathogen loss.

Our next stage is to work with farmers and rural professionals on how these tactics can be implemented, and what other ways we can help farmers improve profit and reduce footprint. To achieve that, we’ve set up farmer groups and a rural professional group. What we learn from these groups will be passed on to other farmers, giving them tangible steps to take on-farm.

Get involved in Step Change

- Visit dairynz.co.nz/stepchange to find out more about the project and where to look for opportunities on your farm.
- Speak to your local consulting officer – see page 23 of this magazine for contact details.
- Talk to other farmers about what you’re doing to increase profit and reduce footprint.






**KEEP
CALVING
AND
CARRY
ON**





Bay of Plenty contract milker Bridie Virbickas is pretty proud of her cows and calves, and the focused care she gives them.

Since readying for the calving season during the early days of Covid-19's Alert Level 4, adjusting to life under lockdown hasn't changed Bridie Virbickas' focus on her team's and animals' wellbeing. 

Contract milker Bridie Virbickas lives in the small community of Otakiri, near Edgecumbe, Bay of Plenty. When *Inside Dairy* first called her to ask if she'd do this story, Bridie was out in the paddock scratching a cow. She describes them as her "pride and joy".

"Sometimes if the cows are nearby, or when I am locking them away, I'll go for a wander and see if anyone wants a pat. You need to love your cows and show them they're appreciated for what they're giving us. We need to make their lives as comfortable and enjoyable as possible."



Two-farm operation

Now into her third season, Bridie and her team milk 650 Jersey cows across two neighbouring farms ('Matuku' and 'Awaiti Trust'). The farms are owned by her parents Bernard and Linda Virbickas, and each farm has a 22-a-side herringbone dairy. The Matuku and Awaiti Trust farms are just down the road from the Virbickas family's 234ha 'home' farm, on which Bridie's sister and brother-in-law contract milk.

As well as the two milking platforms, across Bridie's two properties there are two springer cow sheds and seven calf barns. She also uses extra land on either side, which her parents acquired from neighbours last year (28ha owned and 24ha leased).

"Here, we raise around 250 calves each season – around 160 female and 90 male," says Bridie. "That includes Jersey bull calves, which we sell or lease to people to go over their heifers."

"I'm really proud that our family does that, because it's a whole lot of calves that are not going on the bobby truck. In the 2018/2019 season, we reared 350 Jersey bulls. That does crank up all the calf numbers to feed though – hence the seven barns!"

Readiness: teams and tasks

Being well prepared ahead of calving is important for Bridie, who has a new team on board this season: Dani Maxwell (2IC), Dan Needham (farmhand) and Jessica Woodroffe (calf rearer). Relief milker Kerry Kumar helps out when Bridie is covering for Dani or Dan.

As well as getting her cow sheds and barns, feed and other requirements sorted, Bridie makes sure everyone has lots of time off just before calving, so everyone's fresh and ready to go.

"I also send my two workers to our local vets for what they call a 'first aid' course before calving starts," she says.

As for dry-off, Bridie does this on body condition score (BCS) and calving date, tail-painting the cows based on when she thinks they'll be calving.

"You need to love your cows and show them they're appreciated for what they're giving us."

Feeding up front

"I really pride myself on how my cows look, and I always feed them well," says Bridie. "I've been told by some that my cows need to go on Jenny Craig at times! However, if you go into winter with skinny cows, you're on the back foot from there."

Heading into calving, she feeds the cows mainly grass, maize silage and palm kernel expeller (PKE). When they have good-quality grass silage, they save the good-quality maize silage for the winter and into spring.

Bridie can also shuffle cows around all three farms, based on their body weight. Last season, she put some of her "really fat cows" onto the new 28ha block, so they could graze down its rough land. She sends most of her late-calving cows up to her parents' runoff to feed on grass silage.

She's also recently installed a 600-cow feed pad with four bins and an associated effluent system on the Matuku farm, with a reticulated floodwash with green water as part of the set-up. The system's solids separator does its job before the liquid effluent goes back into the clip tank, where it stays until it's pumped up to the floodwash or out to the paddocks.

"It's just magical. A really clean feed pad is good for my cows' feet too," says Bridie.

Barnstorming

With so many mobs to manage through the calving season, Bridie finds using her springer cow sheds and barns not only makes the job easier, but it's also more comfortable for the cows and calves when the weather goes pear-shaped.

"We place eight mobs of calves across our seven calf barns, each with a nice big outside run fenced off with it. We sanitise the barns twice a week. One old chook shed right next to my house can hold 85 cows; another holds 45 cows.

"So, we get woodchip in there as bedding, and during really horrible weather, the springer cows can spend the night inside – sometimes I even put my colostrum mobs there. Warm, well-fed springers and calves are happier and grow bigger.

"The barns also mean calves aren't out fouling the pasture and putting the cows off eating it. Plus we can keep any sickness or diarrhoea isolated by feeding that barn's mobs last."

"Warm, well-fed
springers and calves
are happier and grow
bigger."



Bridie receiving her trophy for the New Zealand Dairy Industry Awards 2018 Bay of Plenty Dairy Manager of the Year.

Monitoring the mobs

Bridie says her Jersey springers are prone to milk fever, so she keeps a close eye on the mob, checking them first thing every day.

"It's really nice that their shed is near my house too, because I can pop out there in my pyjamas with a spotlight to check on them before I go to bed.

"If there's any cow that I feel is showing signs of trouble, I'll also set an alarm for the middle of the night and pop out and see if she is okay. With my doing that – and the others looking in on them whenever they're passing by that mob – they're being checked on up to five times a day.

"I spend most of my time with the springer mob, but I also help deliver new calves to the baby pen, which means I get to spend time with my calf rearer Jessica as well."

Bridie aims for two pickups a day, one in the morning and one in the afternoon. She sometimes does a midday pickup too, especially paddocks with drains in them, to check the animals are okay.

Nutrition and weaning

Bridie says every calf gets gold colostrum from freshly calved cows milked that morning or afternoon. The end-of-day leftovers are tipped into general calf milk. She and her sister also call on each other for extra colostrum from their farms when they need it.

The calves get tubed, tagged and marked on the forehead with paint to show they're done, then given a 'Multi-min' injection. They stay in the barns and are fed on milk, grain and fibrefresh until they reach 80 kilos.

"Weaning rates are really important, especially towards the end when everyone's getting a bit over it," says Bridie. "Sometimes I'll have just four 'last calves' still getting milk at Christmas time. If they need it, I'll do it.

"I've got green neckbands for my farm's herd, and blue for the other farm's. Jessica and I mark any sickly calves with tail paint and move them to a 'baby pen' in the barn right next to the dairy. We spray a green line over the rumps of calves who've learned how to drink.

"That barn's little pens allow us to shuffle the calves depending on what stage they're at. It's a bit like school and being held back."

"Weaning rates are really important, especially towards the end when everyone's getting a bit over it."

Firm eye on the future

As her third season on-farm unfolds, Bridie's also committed to continuous improvement.

"I'd like to get some written policies and procedures in place now I've had time to settle into my role over the last two seasons. Another goal is to get all the data from these two farms and the home farm into DairyNZ's Dairybase."



Bridie's focus on weaning rates means every calf gets looked after: here's last winter's 'lucky last' four calves still getting milk at Christmas time.

Bridie's top tips

1. Get your cows' body condition scores up well before calving, and keep them there.
2. Provide shelter for cows and new calves during bad weather, so they don't waste energy trying to stay warm.
3. Focus on being patient and giving your calves lots of care.

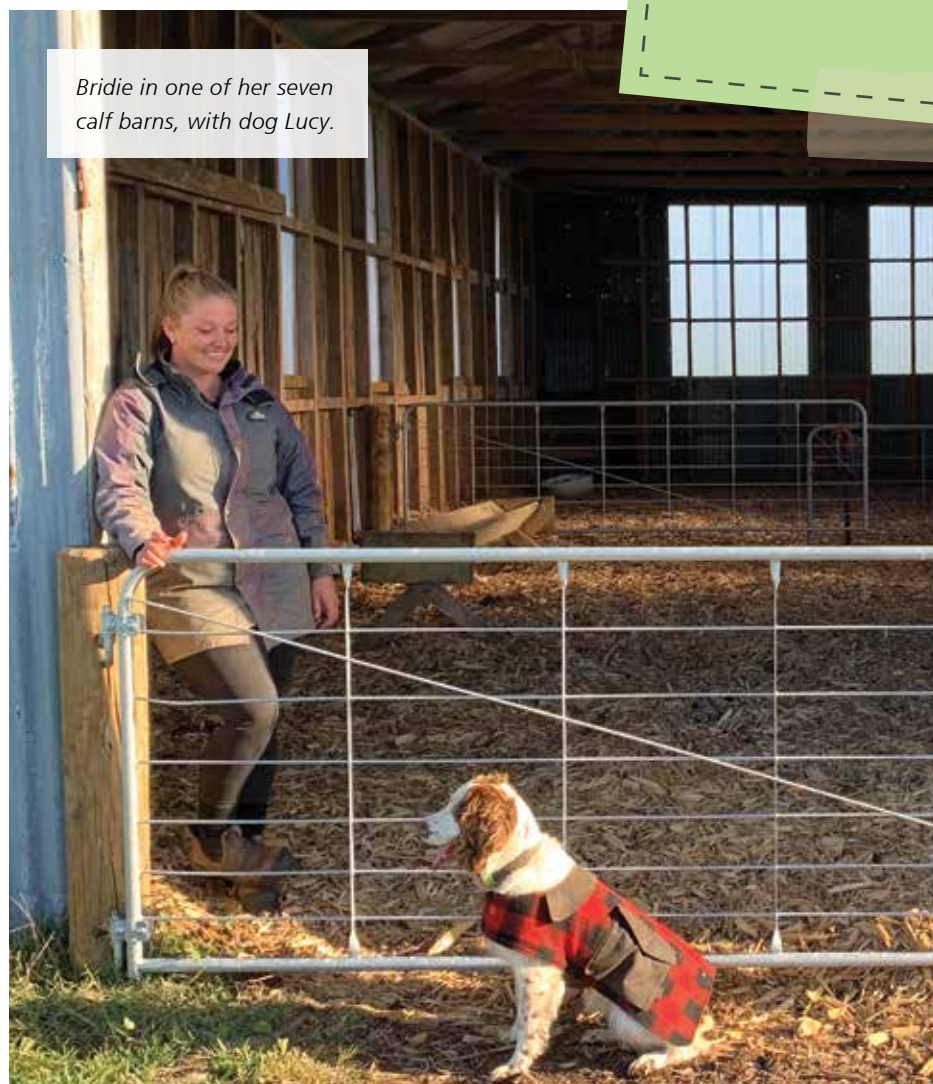
An ongoing environmental focus is also important to Bridie and her family, as this season's feed pad installation confirms. In 2018, she and her mum restored a small wetland area on the farm (with support from the Bay of Plenty Regional Council and Otakiri School students).

In winter 2019, another 1000 flaxes were planted around both farms' waterways. More recently, the new 28ha block was planted with cabbage trees and other native plants.

No matter what she's doing, there's no doubt that Bridie's hands-on approach to her cows and calves' wellbeing will continue to sit at the heart of her operation.

■ **Written by Kaye Whittle**

Find out more about setting up a great calf-rearing system, and our Calf Care Toolkit, at dairynz.co.nz/calf-care



Bridie in one of her seven calf barns, with dog Lucy.

A Covid operation

On Bridie's farms, glove-wearing and robust cleaning procedures were already in place pre-Covid-19. Here's what she and the team added into the mix during the lockdown:

- Social distancing - two metres or more between each person on-farm.
- Each person used only their own farm vehicles and equipment.
- Staff were given extra time off to contribute to at-home childcare.

FARM FACTS

NAME: Bridie Virbickas

POSITION: Contract milker

LOCATION: Otakiri, near Edgumbe, Bay of Plenty

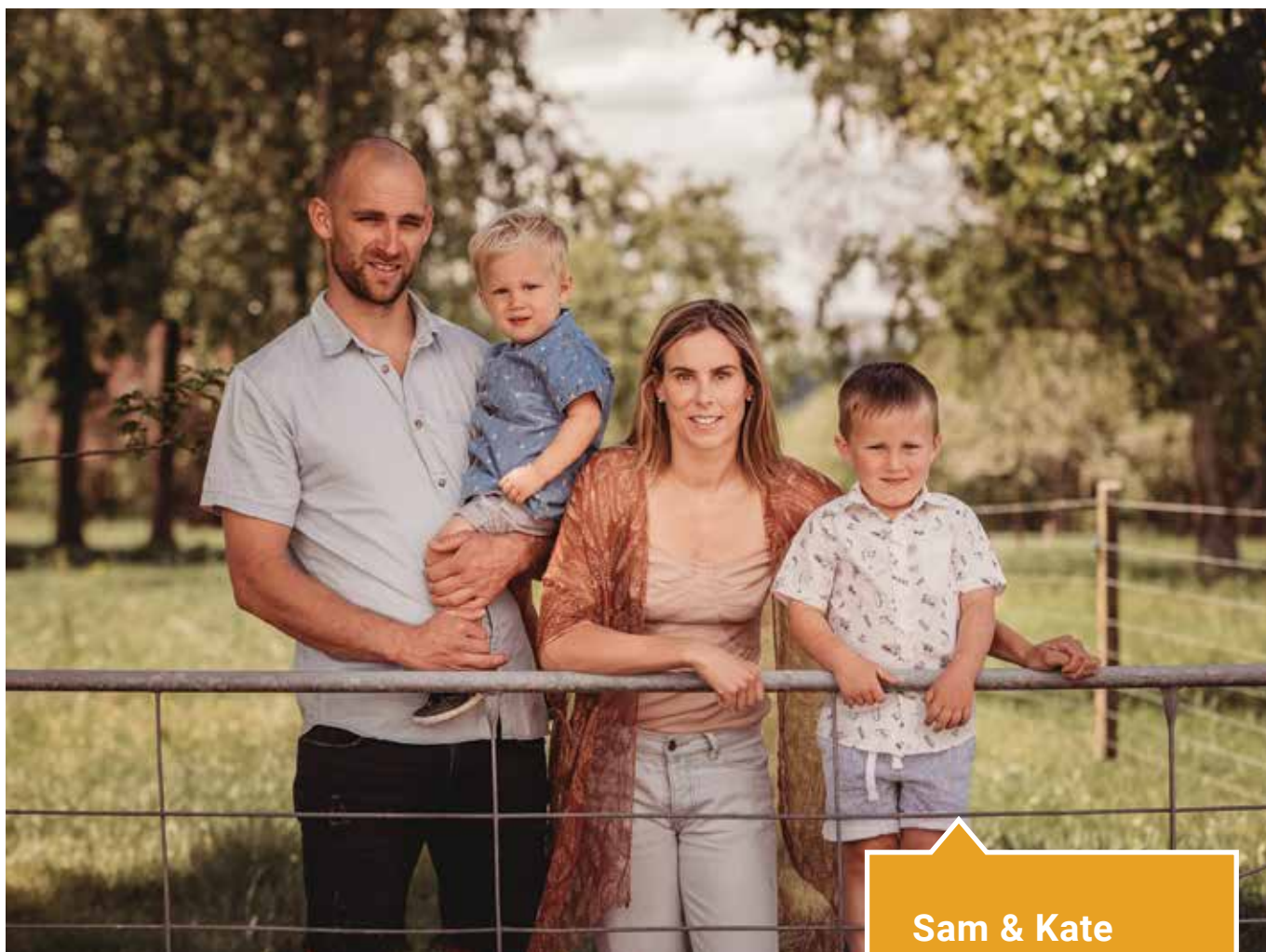
FARM SIZE: 187ha (effective) – two farms – Matuku and Awaiti Trust; including a recently bought 28ha block plus a leased 24ha block

HERD SIZE: 650 Jersey cows (2020/21 season: combined)

PRODUCTION: 250,000kg MS/year (2020/21 season)

Meanwhile, just down the road

You don't have to go far to find dairy farmers who are just as dedicated to calf care as Bridie Virbickas, from this month's lead story. We asked some of Bridie's neighbours what they do to ensure a smooth calving season.



Sam & Kate Moore

POSITION:

50:50 sharemilkers

LOCATION:

Otakiri, Bay of Plenty

CALVES REARED:

100 heifer replacements,
sold 100 bull calves (50
Friesian bulls/50 white face)

- 1.** We use the month before calving to prepare for the busy time ahead. This includes sorting out the calf pens, calving kits and feeders; getting staff familiar with our systems and putting new staff through a local calving workshop; and we discuss as a team how each week will look, so there are fewer surprises.
- 2.** We acknowledge our team members' efforts and keep everyone motivated. Where possible, we rotate mornings and afternoons off to keep our staff's energy levels and enthusiasm high.
- 3.** To keep sane, we go to local mountain bike park once a week with the kids. It's important to get off the farm and have some fun.



Jack & Melissa Shove

POSITION:

Contract milkers (third season)

LOCATION:

Awakaponga, Bay of Plenty

CALVES REARED:

80-95 heifer replacements, black/white bulls and Angus heifer and bull calves sold

1. We check our calving cows prior to going to bed and identify newly born calves by putting a necklace on them, so calves born during the night can be easily identified the next day.
2. We have warm colostrum ready to feed the new calves within 12 hours of birth. This helps with teaching them to drink and it keeps them healthy. Pumping milk to the calf shed takes the physical stress out of carrying milk to the calves.
3. To help calving run smoothly over the first six weeks, we have a calf rearer. That allows Jack and our staff member, Robbie, to focus on the calving cows and the milkers. It also saves them two hours a day, so they can concentrate on running the farm, identifying sick cows and managing pasture.



Kelvin & Heather Langley

POSITION:

Contract milkers

LOCATION:

Edgecumbe, Bay of Plenty

CALVES REARED:

225 heifer replacements, 220 bulls/beefies for sale

1. We establish a plan for calving well in advance of the first calf on the ground. To ensure all calves get the best start, it's essential to have clear procedures that cover the introduction of new calves onto the farm. These procedures include everything from pickup, transport to the pens and allocation of the right amount of gold colostrum, through to navel spraying and tagging.
2. We communicate our plan and procedures to the whole team. From management to calf rearers, everyone should know what the system involves. It's a good idea to type up the key points and give a printout to staff; have a copy in the shed for reference too.
3. Enjoy it – make sure you have a laugh. It's an intense time of the year, but it's truly rewarding to see healthy and happy calves growing well and meeting their target weights.

Rolling a down cow

WHEN TO ROLL, WHEN TO LIFT

Cows can get nerve and muscle damage from sitting on the same side all day. This makes it less likely they'll return to the herd.

However, lifting cows before they're ready to stand can do more harm than good. The wings of the pelvis, where hip lifters are attached, are not designed to bear the cow's weight. Cows that aren't prepared or able to hold their own body weight are at risk of skin, muscle and bone damage during lifting. Animals that are already stressed can find this even more distressing.

As such, you should only lift cows that are highly likely to be able to bear their own weight.

Assist the cow to stand if she:

- is bright and alert
- isn't trembling or twitching
- doesn't appear severely weak or diseased
- appears to have normal and functioning limbs.

If in doubt, roll her instead of lifting – it takes less time and is less risky to the cow.

Remember: roll for bloodflow; lift to stand.

For more information on down cows
visit dairynz.co.nz/down-cows



1. TUCK THE COW'S LEGS IN

- The closer they are to her body, the better.

2. ROLL THE COW OVER

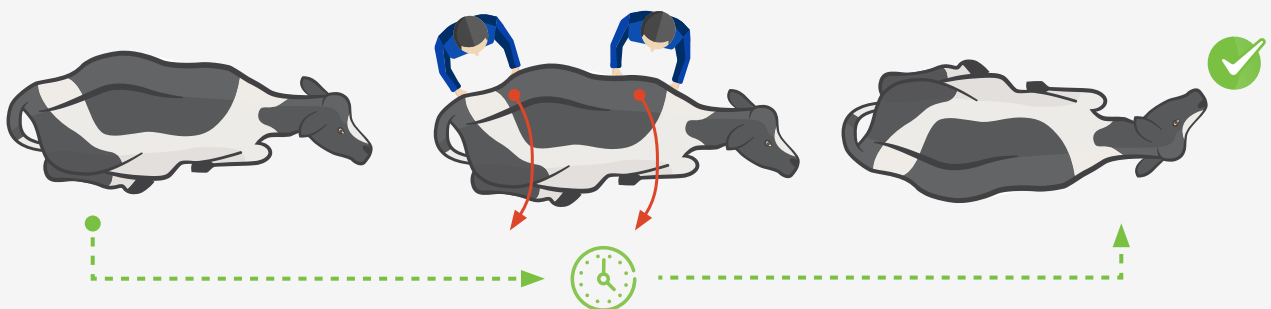
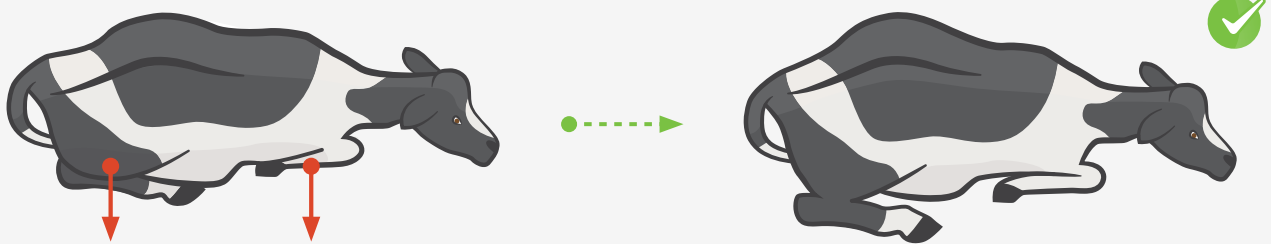
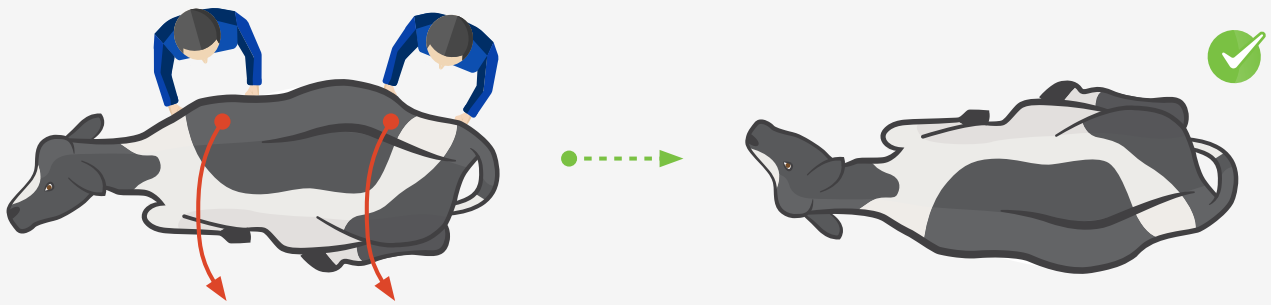
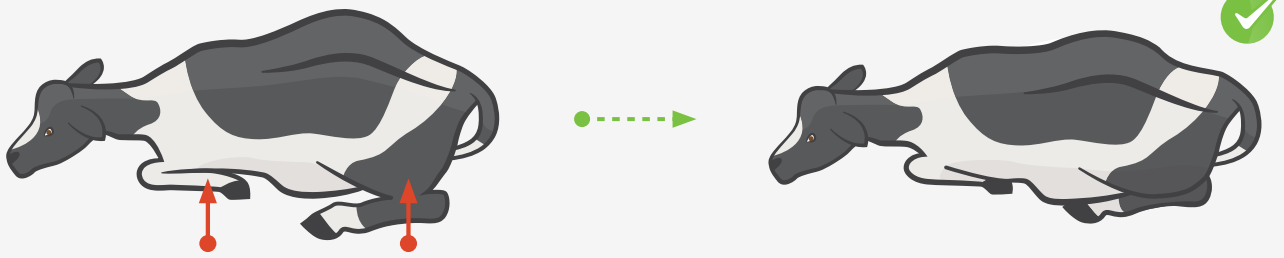
- Stay low, bend your knees and push from her hips.
- If possible, grab a teammate to help push from her shoulders.
- Don't do yourself an injury.

3. PULL THE COW'S LEGS BACK OUT

- Each time you roll her, flex and extend her back legs afterwards to help with bloodflow.

4. REPEAT TWO TO FOUR TIMES DAILY

It's important to get a down cow back on her feet as quickly as possible, but using hip lifters too soon can be damaging. Here's how to roll a cow until she's ready to stand.



Heifer 'training' put to the test

Could a pre-calving exercise regime help to prevent lameness in heifers? Te Awamutu vet and researcher Winston Mason is investigating.

We don't expect humans to run or walk long distances without having done some training. But that's essentially what we're asking heifers to do when they start milking, says Winston Mason.

This month, Winston will begin a one-year heifer intervention study to see if it's possible to reduce lameness by conditioning the animals' hooves before calving.

"You don't just wake up one day and think, 'I'll run a marathon'; you need to build up to it over several months. We'll be taking this 'training' approach with the heifers," says Winston.

Heifers encounter several unfamiliar things at calving, he says. It's often the first time they've walked long distances, seen concrete, been with other cows, been milked and seen certain farm workers. And this all happens almost on day one, without any warning or preparation.

His experiment – the first of a four-year project that'll form part of his PhD thesis on lameness – will involve 600 heifers from six Waikato dairy farms. Half will receive a mix of exercise and the others will form the control group. The heifer study, and some of the extension work, is partially funded by DairyNZ's levy.

Heifers receiving exercise treatment will walk varying distances along track surfaces and stand on hard surfaces for about 60 minutes before being returned to the paddock. They will be locomotion-scored every fortnight during their first lactation.

Winston hopes his research will provide a model that can be implemented by farmers.

"We know calving has an impact on hoof health, but there aren't necessarily any science-based solutions to it and that's where our study comes in," he says.

"As far as I'm aware, nothing has been done to look at strengthening the hoof of a dairy heifer, particularly in a pasture-based system. We want to find out if we can strengthen or condition the hoof to help her face the challenges she'll come across at calving.

"All being well, we should have some results to share by this time next year."



Why calving increases lameness risk

To make calving easier, hormones relax a cow's pelvic tendons and ligaments. This also affects the hoof which becomes less stable and more prone to damage. Additionally, body condition loss after calving affects all areas of a cow's body fat including the hoof cushion, reducing its ability to absorb shock. These two factors increase the risk of lameness. Maintaining a healthy hoof around calving then becomes critical to reducing the lameness impact for the entire season.

Learn more about the causes of lameness, and ways to prevent it, at dairynz.co.nz/lameness

Winston Mason is a clinical vet and epidemiologist at VetEnt, Te Awamutu. The other part of his research will be to see if anti-inflammatory treatments improve the outcome of lameness.



Cow-calf interactions revealed

What do cows and calves really get up to in the calving paddock? VetEnt researchers Emma Cuttance and Winston Mason have been finding out.



Positioned in scissor lifts, researchers have been carrying out 24/7 surveillance of cow-calf behaviour on farms in Canterbury and Waikato.

In New Zealand, the time calves are left with their dam varies from farm to farm. But can we assume newborn calves in the paddock have a better chance of getting the colostrum they need by feeding off the dam?

If they don't, 'failure of passive transfer' (FPT) can occur, increasing mortality and decreasing health and longevity. Passive transfer occurs when calves absorb antibodies from colostrum across their intestinal wall.

Following on from a large New Zealand study¹ carried out across 105 farms nationwide in 2015, we wanted to investigate cow-calf paddock behaviour more thoroughly. Is it true that calves don't suckle off the dam? How can farmers improve calves' suckling behaviour in the calving paddock?

What we did

Our current study was carried out across four farms, two in Waikato and two in Canterbury, using scissor lifts (see photo) to observe the cows and calves, 24 hours a day over 12 days/farm. We observed 409 calves altogether, plus their dams, noting:

- calves' times of birth, first feed and/or pickup from the paddock
- the weather, feeding break size, and pasture cover
- FPT rates using calves' blood samples taken on day 1 (prior to colostrum fed by farmer) and day three of life
- colostrum quality.

What we found

Peak period of births was 11 a.m. to 3 p.m. (all four of the farms). An average of 57 percent of all calves were fed from their dam in the paddock (range: 40 to 87 percent). On one farm it took 1.7 hours for 50 percent of calves to feed; on another, 7.8

hours. Calves left longer in the paddock fed more (this effect reduced after six hours post birth). However, simply 'leaving a calf on a cow' will not mean that all calves feed.

FPT – overall results

- FPT at day 1 (before calves were fed colostrum by the farmer) occurred in 72 percent of calves (range: 21 and 82 percent).
- FPT at day 3 was 12 percent of calves (range: four to 32 percent).
- FPT at day 3 was 85 percent more likely to have occurred in calves that had not fed in the paddock, BUT this was salvageable by the farmer IF the colostrum was of high quality.
- FPT at day 3 was less likely in calves fed high-quality colostrum (≥ 22 g/L) by the farmer compared to calves fed lower-quality colostrum (< 22 g/L).

Fewer FPT issues occurred in warmer temperatures. In what little rain did occur, calves appeared to struggle to get up to feed and follow the dam.

What's next?

This study will be repeated later this year, with another two farms each in the Waikato and Canterbury. Keep an eye out for the results in a future edition of *Inside Dairy*.

1. The 2015 study showed that failure of passive transfer (FPT) occurred in 30 percent of calves and was associated with poor welfare outcomes. (Cuttance et al., 2018).

Gold standard for liquid gold

Otago farm manager James Matheson thought he was doing a decent job when it came to calf care – until antibody test results showed otherwise.



Using a Brix refractometer has led to a big improvement in calf health for farm manager James Matheson (centre), his herd manager Sam Bee (left) and calf rearer/herd manager Reuben Earl.

Four years ago, James Matheson made a simple change that's vastly improved the health of his calves.

As part of the WelFarm programme run by XLVets, calves at Chris Lawlor's Waipahi farm, managed by James, were given antibody blood tests. These tests establish if calves have received enough protective antibodies to help them develop immunity.

"Back then, we were rearing 250 calves and thought we were doing a good job, but it turned out half the calves weren't getting enough of the right colostrum, so we had to make changes," says James.

"Our vet introduced us to the Brix refractometer, and since we've been using it to test colostrum, we haven't looked back."

Test for the best

James says that once his team started using the Brix, they followed up with antibody blood tests and had pretty much perfect results, whereas before it had been “a bit hit and miss”.

“We would strip the cow into a test bucket, and everyone would be saying, ‘look at this – it’s good stuff’. But when we tested it, it was terrible, so we were failing to identify the best colostrum and the calves were missing out.

“There’s an old tale out there about heifers having terrible colostrum. In reality, we’ve found they quite often have better-quality colostrum than the cows, albeit less volume. If we didn’t have the Brix to measure it, we’d be none the wiser.”

“ ... since we started using a Brix refractometer, we haven’t lost a heifer calf through illness.”

James says the best colostrum goes to newborns, the next best colostrum goes to first and second feeders, and it peters off from there until the calves are four days old.

“It’s made us realise how important it is to test colostrum quality. This is reflected in the health of the calves too because, since we started using a Brix refractometer, we haven’t lost a heifer calf through illness.”

These days, James and his team rear 500 calves. It’s a big operation and needs a finely tuned system.

In charge of calf rearing is Reuben Earl, who joined the team fresh from Telford Agricultural College two seasons ago. James says, at the time, they didn’t have a dedicated calf rearer, which most farmers would consider essential.

“And I would agree. To be honest, I was worried. This was Reuben’s first job, so it was vital that we had good systems in place from the start. Reuben and I collected all the information we could lay our hands on, including from DairyNZ’s website, and developed a plan that followed best practice. We call it our ‘traffic light’ system.”

Getting the green light

Under the system, new arrivals are sprayed with a blue dot, tubed with gold colostrum, given a probiotic and a mineral jab. They get a red dot while they’re learning to drink, an orange dot when they’ve got the hang of it, and a green dot when they feed on schedule.

James says the system works a treat.

“Reuben gets great results. I think it comes down to his attention to detail. He’s really particular and follows the system to a ‘T’, and everyone that helps has worked out that if they follow the system exactly, it works perfectly.”

For everything you need to know about great calf care, go to dairynz.co.nz/calf-care

2000+ FARMERS LEVELLING UP



To help farmers take their calf care to the next level, DairyNZ developed the Calf Care Toolkit last season. So far, it’s been used by more than 2000 farmers.

It’s easy to use: simply answer 12 easy questions online and get instant tailored feedback and farmer advice on ways to make your calf care even better. Once you’ve decided which areas to focus on, follow the web links for more advice and support. You can also share the results with your team, vet or consultant.

Give it a go at dairynz.co.nz/calf-care-toolkit



JAMES & REUBEN'S TOP TIPS

- Test with a Brix to ensure calves get enough good-quality colostrum.
- Make sure you have good hygiene practices in place.
- Have a good calf-rearing system – it’s more important than having loads of experience in your team.
- No matter what the system, it’s vital to keep it simple and ensure everyone follows it consistently.

Team's small steps, big gains

When it comes to making changes on-farm, sometimes slow and steady wins the race – as a Southland farm team found out.

The team at Hokonui-based Mako Dairies recently took part in one of a series of levy-funded animal care pilot programmes looking at simple approaches to tackling on-farm challenges.

DairyNZ animal care consultant Anna Irwin says she chose lameness for her study because it's a subject she's particularly interested in.

"I've worked with farmers on lameness for my whole career and, although Mako Dairies hadn't identified lameness as a problem, I wanted to find out if there was anything we could improve."

Farm manager Tuka Smith and Anna began by talking about how they dealt with lame animals at Mako Dairies.

"We discussed our processes and treatment, identified the things we didn't like and what we thought we could improve. Anna got to know the team and found out what their frustrations were," says Tuka.

"As a team, we didn't have much experience in dealing with lameness and, perhaps more importantly, not much confidence, so we were outsourcing treatment."

Tuka says they milk 860 cows in two mobs. When Anna first came to visit, they had about 50 lame animals, and milking them separately was adding about 30 minutes to their daily milking routine.

The team identified that their inconsistent approach to moving the backing and top gates was causing cows to get jammed up.

They developed a new routine, which involved changing the control panel settings and adding a star chart so that, at each milking, if a team member thought they'd used the gate correctly, they put a star beside their name. Tuka says this routine became second nature after a few months.

When Anna revisited after three weeks, she found the conversation around lameness had completely changed.

"Everyone was using the gate well, and as a result, pressure on the animals had reduced. Milking had sped up and there were fewer lame cows. After another three weeks, their lameness had halved."

Once the milking routine was sorted, the team turned their attention to treating lame animals. They went to a Neil Chesterton lameness seminar and their vet, Theo Wieggers from

VetSouth Winton, came to the farm and showed them what to look for, and how to trim and treat feet.

Another habit Tuka's team adopted was recording lame cows in the DairyNZ Healthy Hoof App.

Anna's been impressed by how Mako Dairies embraced the changes.

"They came up with the ideas, took ownership and made changes one step at a time."



"It's still a work in progress, but there've been great improvements."

Mako Dairies farm manager Tuka Smith (second from right) says it takes "heaps of baby steps to make progress". Alongside him are team members (left to right) Billy Muana, Alvin Nunez and Rose Castro Penas.

Top tip

Next time you want to achieve a farm change, start with a small step that takes less than two minutes. Small steps are like compounding interest – they add up to big change.



BEING A GOOD BOSS DURING CALVING

It's been a stressful start to 2020 but being a good boss during calving is absolutely achievable – just approach it one step at a time, says DairyNZ's People Team leader Jane Muir.



Calving is a demanding time of year for employers at the best of times, without the added challenges of a global pandemic, staffing and feed shortages, and milk price uncertainty. Right now, even small, simple steps will make big differences for your farm team.

Communication

According to DairyNZ's recent survey, communication from the boss is the number-one thing that matters to employees. So, make sure everyone in your team knows what tasks need to be done, what's expected of them and what they're responsible for.

Regular catch-ups are more important than ever and will result in everyone knowing what the priorities are, which actually saves time. This could be as simple as catching up over breakfast or having a 10-minute meeting in the smoko room after morning milking.

Plan your roster for calving

Ensure you and the team are prepared, competent and enthusiastic – at the beginning, in the middle and right through to the end of calving. That means everyone needs to work realistic hours and enjoy regular days off-farm.

This season, there's a chance you're going into calving with reduced team numbers. If so, it's even more important to plan your roster. Consider employing someone to help with calving on a fixed-term employment agreement. That extra person can make a big difference in reducing workload stress for everyone, and improving outcomes.

Also think about how you could improve rosters and hours of work, and how you allocate tasks. Are some staff having to get up early all the time? Are people getting enough breaks and time off to recharge?

Wellbeing

Team members may be feeling more stressed or anxious than usual. What extra support can you provide during the busy period? Tea and coffee, bottled water, and nutritious energy-boosting snacks like fruit, muesli bars and protein drinks, can go a long way.

Talk with your team about important on-farm health and safety issues for this time of year. Accidents are more likely when people are tired and busy, so try to reduce risks but also ensure staff know that safety is the most important thing – a strong safety culture will give the best and safest outcomes for your business.

Make the most of every opportunity to upskill your team members – it's a big factor in keeping people motivated and satisfied in their job.

Remember to take time to celebrate a few milestones during the busy period. A simple fish and chips night, or cake and coffee at morning tea, can be a real morale-booster. It doesn't take much but it'll mean a lot to your staff.

For more tips and resources for being a good boss, visit dairynz.co.nz/goodboss



Water quality campaign helps clarify responsibility



DairyNZ's 'The Vision is Clear' campaign has reached millions of New Zealanders since it started 18 months ago and it's having a positive effect on what Kiwis think of dairying.

Latest research results show significantly fewer New Zealanders now think dairying is a large contributor to waterway pollution¹. Meanwhile, the favourability rating for dairy farmers is increasing and continues to be stronger among those who have been exposed to The Vision is Clear².

In addition, respondents taking part in a recent The Vision is Clear survey overwhelmingly agree that it's the responsibility of all New Zealanders to work towards improving our waterways².

Celebrating our waterways

Throughout March, we celebrated World Water Day with nationwide radio station ZM, engaging Kiwis across the country, raising awareness of The Vision is Clear and encouraging people to be part of the movement by following The Vision is Clear on Instagram.

Instagram followers increased by 29 percent, we reached 137,000 Kiwis across ZM's social channels, and we had 549 entries showcasing the beauty of New Zealand's waterways. Ten lucky entrants won a \$250 cash prize and a fabulous eco prize pack (see some of the winning entries on the right).



1421 more native trees in the ground

Our 'Do Something Tree-warding' initiative, which finished at the end of April, resulted in Kiwis donating 1421 native trees. All trees donated were allocated by conservation charity Trees That

Count to community planting projects near waterways throughout the country.

Don't forget: if you've been planting native trees on your farm, you can add these to Trees That Count's nationwide tally. You can also apply to them for more trees (free) so you can keep planting – see treesthatcount.co.nz/planters

Continuing the momentum

We know our success stories are playing their part in changing perceptions of dairy farmers in relation to water quality, so we'll keep on telling more stories of real people doing amazing things to protect waterways.

Over the next year, The Vision is Clear will continue to showcase the great work farmers are doing in a series called **#VisionaryKiwis**

Tell us your stories

Our thanks go to farmers who've already shared their stories with us. Keep them coming. If you have a success story to share about what you're doing on-farm to look after your waterways, email us so we can help spread the word.

Contact thevisionisclear@dairynz.co.nz

1. Perceptive Research January 2020. 2. Nielsen Research- NZME Online Panel. The Vision is Clear Survey March 2020.

BY THE NUMBERS

Visitors to the visionisclear.co.nz

343,615

Video Views (incl social)

6.73M

Social media engagement*

210,929

Articles published

81

Print ads

595

Radio ads

3.97M

Getting freshwater rules right

As we await a decision on the Essential Freshwater package, DairyNZ has been working hard to make sure dairy farmers get the best outcome possible.

Last October, DairyNZ made a comprehensive submission on the Government's Essential Freshwater policy. In April, in light of Covid-19, and the current uncertain economic environment, DairyNZ re-iterated its position with the Government that:

- DairyNZ's view has not changed
- there is an even greater need during these challenging times to ensure policies are pragmatic and guided by science.

We're working with the Government to ensure it's aware of the good progress farmers are already making to improve water quality. Our view is the economics and science underpinning some of these proposed policies doesn't stack up. While we don't know when a decision will be made*, we'll continue using every opportunity to reinforce pragmatic and evidence-based solutions, as outlined in our submission.

We support:

- a focus on farm environmental plans, building off existing sector initiatives and starting with priority catchments first
- holding the line with no further intensification in catchments where water quality challenges already exist, while we figure out the science and solutions required
- a focus on ecosystem health outcomes through the right standards and metrics.

We don't support:

- the proposed nitrogen and phosphorus ecosystem health targets (the Dissolved Inorganic nitrogen (DIN) and Dissolved Reactive Phosphorus (DRP) numbers)
- moving existing fencelines as part of the new stock exclusion guidelines.

We stand behind the assessments in our submission, and we do not support the DIN standard of 1. We do not accept that the evidence base is robust enough to justify the level of intervention and disruption needed to meet this standard. We also believe this standard will fail to deliver water quality improvements across many catchments.

The proposed policy package, as it stands, has the potential for significant long-term economic impacts. We remain deeply concerned about this. Our own economic analysis showed a real GDP fall by \$6 billion annually and a total exports decline of 5.2 percent by 2050.

We believe water quality improvements can be achieved with less stringent reforms, at a reduced cost to the New Zealand economy. Similar environmental outcomes could still be achieved while reducing the worst of the economic impacts.

We're working hard to achieve a pragmatic, science-based solution on dairy farmers' behalf. Our aim is to ensure future changes are not only good for the environment, but also allow farmers and rural communities to thrive and contribute to New Zealand's post-Covid-19 recovery.

Visit dairynz.co.nz/freshwater for updates and DairyNZ's submission.



**At the time of going to print with this edition of Inside Dairy, a decision had not been made on the Essential Freshwater proposals.*

Pros and cons of ad-lib feeding

Many farming businesses have begun implementing 'ad-lib' or high-volume calf-rearing practices. DairyNZ's Vanessa Robinson investigates this increasingly popular method.



Calf-feeding practices over a calf's first 12 weeks fall into two main categories:

- Low volume, where milk fed equates to ten percent of the calf's body weight, i.e. four to five litres a day.
- High volume, where milk fed equates to at least 20 percent of body weight, i.e. eight to 12 litres a day.

Low volume

Developed in the 1920s, this approach aims to improve the profitability of the calf-rearing process.

Milk restrictions entice calves to eat more meal earlier, which leads to early rumen development.

Calves can be weaned earlier and fed on lower cost pasture or meal, without detrimental effects on growth rates.

High volume

Growing evidence suggests lifetime productivity can increase from feeding calves greater volumes of milk.

The first 12 weeks of a calf's life provide an opportunity to manipulate average daily growth rates, as there is high feed conversion efficiency and the increase in milk intake leads to increased growth rates.

Well-grown heifers have better lactation performance throughout their lifetime and tend to calve easier and get back in calf sooner.

Ad-lib feeding

A common high-volume method is 'ad-lib' feeding, where calves can access milk at any time. Benefits include reduced labour and stress (milk containers are only filled once a day, or every few days if preserved), allowing more time for staff to complete other tasks over calving.

Milk hygiene for these large volumes needs to be vigilant though, and calves must still be checked daily for signs of disease and infection.

Because calves are less inclined to eat meal on offer when they're being fed more milk, they may also need to stay on the milk longer, or follow a stepwise weaning process, so their rumen develops adequately prior to weaning.

Choosing your method

Calves can reach target growth rates and rumen development with either low- or high-volume feeding. It's important to weigh up the pros and cons of each method when determining which to use on your farm. The reduced labour and stress of high-volume methods need to be compared with the increased costs in extra milk or milk replacer and extended period of milk feeding.



Key points

1. Calves can reach target growth rates and rumen development through either low-volume or high-volume feeding systems.
2. Ad-lib feeding can result in greater growth rates pre-weaning, and heavier weaning weights.
3. Ad-lib is not suitable for early weaning systems, as the rumen takes longer to develop.

Find out more about calf care, feeding and weaning calves at dairynz.co.nz/calves





Thank you for voting

DairyNZ would like to thank every farmer who took the time to vote on the milksolids levy during April and May. At the time we sent this edition to print (May 20), about 40 percent of eligible farmers had cast their vote.

The levy vote comes around only once every six years, so it's an important time for as many farmers as possible to have their say on the levy, which funds industry-good organisation DairyNZ.

Voting will be closing as this edition hits your letterboxes, so keep an eye out for the results or visit dairynz.co.nz/vote

DairyNZ events – check online

DairyNZ has adapted its support to farmers during the Covid-19 restrictions. We've shifted our discussion groups



and other events to the web, allowing farmers to beam in via their computers from the comfort of home.

At the time of going to print with this edition of *Inside Dairy*, we're still unable to predict which events will be running in each region, and in what format, in June.

For an up-to-date list of discussion groups and events in your region, visit dairynz.co.nz/events or phone your local consulting officer (contact details to the right).

Inside Dairy & Tech Series changes

At DairyNZ, we want to continue providing you with the best information in the best format. We know the number of visitors to our website is growing all the time, which is why we've decided to move *Inside Dairy* from a monthly to a bi-monthly magazine. Our *Inside Dairy* team will be spending more time writing articles for our website, while also producing *Inside Dairy* magazine every two months. Keep an eye out for our August/September edition.

Also, we've been looking for ways to share our levy-funded research with you more regularly. Instead of publishing *Tech Series* every three months, we'll now publish our scientific articles in each edition of *Inside Dairy*. Don't miss this month's 'Tech Series: Science in Action' article (page 25) on the early results of our research into three-in-two milking.

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| Wairarapa/Tararua | Rob Brazendale | 021 683 139 |
| Eketahuna | Andrew Hull | 027 298 7260 |
| Hawke's Bay | Gray Beagley | 021 286 4346 |
| Northern Manawatu/Wanganui/Woodville | Rob Brazendale | 021 683 139 |
| Central Manawatu/Rangitikei | Charlotte Grayling | 027 355 3764 |

South Island – Head: Tony Finch 027 706 6183

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Canterbury/North Otago

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| Central Canterbury | Alice Reilly | 027 3798 069 |
| Mid Canterbury | Stuart Moorhouse | 027 513 7200 |
| South Canterbury | Heather Donaldson | 027 593 4124 |
| North Otago | Alana Hall | 027 290 5988 |

Southland/South Otago

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Or send an email to: chair@dairynz.co.nz or director@dairynz.co.nz

Winter cow care and comfort

DairyNZ animal care team manager Helen Thoday represents dairy on the Wintering Action Group. Before the Covid-19 Level 4 lockdown, she toured Southland and South Otago, talking to farmers about the basic requirements for animal welfare during winter.



Animals can give birth well ahead of their expected calving date. So how can we avoid cows calving in mud and ensure they eat up the winter crop before returning to pasture to calve?

Keeping an eye on calving dates

Every farmer I spoke to was using timed pregnancy diagnosis. Most farmers grazed cattle in mobs by calving date and with bigger mobs split again by condition. On farms where the body condition score range was more spread towards dry-off, farmers were likely to split by condition first, as the aim of winter grazing is to reach target calving condition score.

Comfortable lying areas

Cows are stoic and don't give us obvious messages that they'd prefer to be elsewhere. What we do know is they value lying down, and they choose dry lying surfaces over wet or dirty ones.

Options for drier areas

Heavy soils are more challenging when it comes to comfortable lying surfaces. Have a contingency plan for adverse weather events. When mud gets too sloppy, offer cows a drier area so they get the rest they need.

Farmers we spoke to had a range of in-paddock or out-of-paddock options to manage surface comfort. In-paddock farmers moved their feed break fences more regularly, e.g. three times daily, or dropped a back fence to access drier areas somewhere

else in the paddock. Out-of-paddock options included using tussock blocks, rocky knobs, shelter belts and forestry lanes.

Your decision-making should be driven by a number of factors in combination, including looking at the ground conditions your cows have experienced in the last 24 to 48 hours, and how the weather will affect the ground conditions for the next 24 hours. This should help you decide whether to alter your management to provide a comfortable lying area.

Adverse weather plans

On some farms, if cows are well fed and have lots of space to move and huddle within the swales and rises of a paddock, they're pretty good at sorting themselves out in short periods of adverse weather.

Some farmers felt if the farm was reasonably sheltered, cows could stay on the break and put their back ends in to the wind in mild storms. However, on some more exposed farms cows will be more comfortable utilising out-of-paddock options, particularly those that provide shelter.

Find out more at dairynz.co.nz/wintering and dairynz.co.nz/animal or call Helen Thoday with any questions on animal care at **0800 4 DAIRYNZ (0800 4 324 7969)**.



Thinking through three-in-two

DairyNZ senior scientist Paul Edwards gives an update on a three-year study of flexible milking approaches, including milking three times in two days (3-in-2). Find out the results so far, and what's planned for the next two years.



Flexible milking – what is it and why use it?

Attracting and retaining quality staff is a challenge faced by most dairy farmers in New Zealand. It's such an important issue that our dairy sector's strategy, Dairy Tomorrow, makes 'building great workplaces for New Zealand's most talented workforce' one of its commitments. The challenge is that dairy farm work often involves long, unsociable hours, which reduces our competitiveness for talented staff, relative to other industries.

On average, at peak lactation, milking absorbs 17 to 24 hours on-farm per person per week, depending on herd size and dairy type. Traditionally, cows in New Zealand have been milked twice a day (TAD), with a 10-hour/14-hour (10/14) interval, which means a 4 a.m. start to the day for larger herds. So, changing milking schedules is a way to reduce work hours, increase flexibility and improve dairying's competitiveness as a workplace.

Many farmers are familiar with once-a-day (OAD) milking. The interval between milkings is extended to 24 hours, halving the number of milkings. It offers increased flexibility because milking can be set at any time during the day. On average, OAD reduces time spent milking by 9.5 hours per person per week at peak lactation.

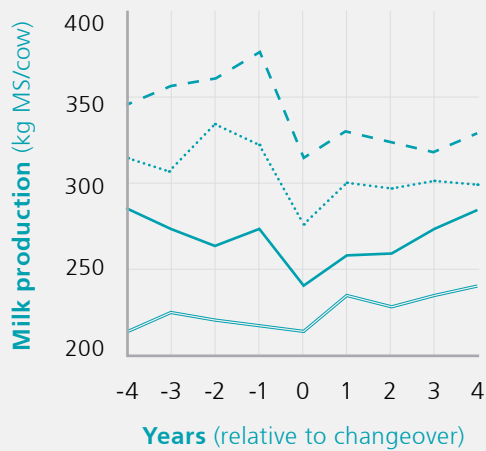
However, OAD doesn't suit every farm. Research on farms that have adopted OAD identified that milksolids (MS) production was reduced by an average of 11 percent. But this varied depending on the farm system. Those producing up to 300kg MS/cow experienced minimal production loss compared with systems producing more than 300kg MS/cow (Figure 1). The ability to offset this loss in revenue will differ depending on the current farm system and cost structure.

New Zealand and overseas research in the 1950s and 1960s found the rate of milk secretion was linear up to around 16 hours. This led to the original concept of 16-hour milkings, with theoretically little to no loss in production, while requiring 25 percent fewer milkings than TAD. Example milking times were 5 a.m. and 9 p.m. on day one, and 1 p.m. on day two.

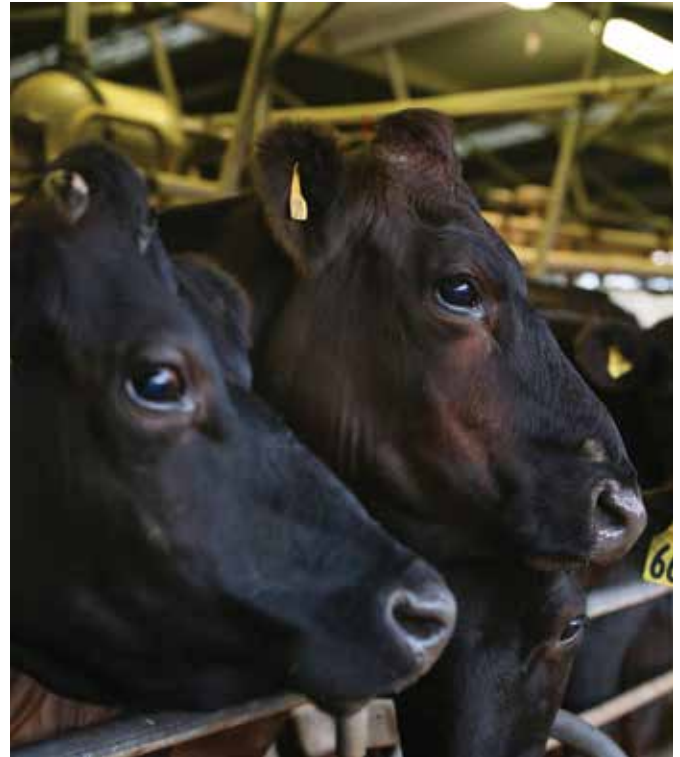


Figure 1.

MS production per cow before and after adopting OAD



Results are grouped by pre-OAD production (kg MS/cow).
Year 0 represents the year the herd adopted OAD milking.

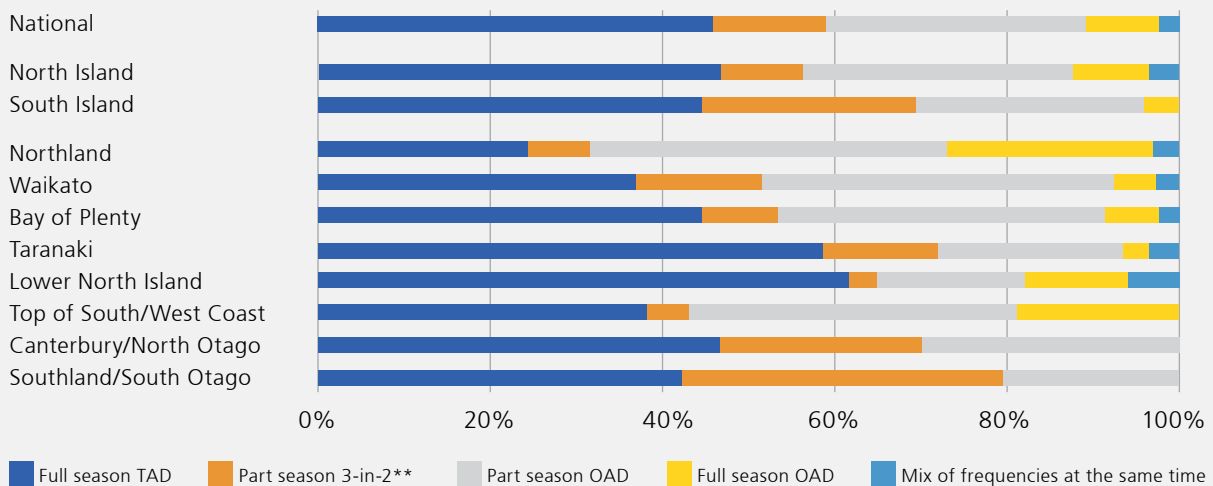


While some farmers liked this approach, the strategy had limited uptake due to the unpopular late-night milking. So, farmers evolved the 16-hour intervals to a more general schedule of milking three times in two days (3-in-2), first using 14/16/18 intervals and, more recently, 12/18/18. Some farmers have since extended this to 8/20/20. However, many combinations are possible.

3-in-2 milking has a fortnightly cycle, where week one has 11 milkings and week two has 10 milkings. This means the days with two milkings alternate from week to week. One variation is 10-in-7 (10 milkings in seven days), which uses a 3-in-2 milking schedule for the weekdays, but only one milking on Sunday. This results in a OAD weekend and a consistent milking schedule from week to week.

Milking 3-in-2 has become more popular, with an estimated seven percent of farmers using it for part of 2017/18, 12 percent using it in 2018/19, and 14 percent using it in 2019/20. There's significant regional variation (Figure 2): 3-in-2 is more popular in the South Island (over a quarter of farms), likely because the prevalence of higher-producing herds and less ability to reduce costs (e.g. irrigation) makes OAD less appealing.

Figure 2. Regional use of different milking regimes from a survey of 333 farms in 2019/20*



*The survey finished short of its 500-farm target due to Covid-19. **Farmers that used 3-in-2 may also have used OAD.

Building confidence in 3-in-2 milking

To learn more about the human, animal and pasture response to 3-in-2 milking, the Flexible Milking project was launched in July 2019. Funded by the Ministry for Primary Industries' Sustainable Farming Fund and the DairyNZ levy, the three-year project aims to build the confidence of farmers and advisers to adopt, optimise, and/or support the use of 3-in-2. The overall goal is to achieve better on-farm wellbeing and workplace attractiveness, while maintaining profitability.

We want to build confidence in making two decisions:

1. whether to adopt 3-in-2 milking
2. when to use 3-in-2 (e.g. full season, for half the season or just at the end of the season).

Answers to these questions will differ from farm to farm.

A key barrier to building this confidence is the lack of information around 3-in-2's impacts on system performance. Only one study has been conducted on the topic – presented at the 1985 Ruakura Farmers' Conference – comparing an 11/18.5/18.5 interval with TAD, for a full lactation, with 36 sets of twins. The authors reported a six percent decrease in milkfat production (182 versus 171 kg/cow) over 255 days with 3-in-2. At the end of the lactation, 3-in-2 cows were 0.7 body condition score units higher than those milked TAD. In the 35 years since this study, cow genetics and milk payment systems have changed.

In the first year (2019/20) of the Flexible Milking project, the main activities are:

- a farmlet experiment at the Lincoln University Research Dairy Farm (LURDF) to quantify the farm system effects of using 3-in-2 at different stages of lactation (see next section)
- interviewing 12 farmers already using 3-in-2, covering different regions, business types, milking intervals and stages of lactation. The aim is to help identify farmers' common challenges, solutions and questions when considering and using 3-in-2.

In year two, we plan to develop resources using information collected in year one. We'll run a second experiment to further explore the effect of different milking intervals (e.g. 10/19/19 and 8/20/20) that improve the sociability of work hours. We'll also pilot full-season 3-in-2 milking on several commercial farms, for both the demonstration aspect and to gain insights into the effects on animal health, reproduction, costs, and people.

Our plan for year three is to finalise resources, based on feedback from the previous year, and incorporate new knowledge from year two. There's also an opportunity to explore combinations of different milking intervals under different scenarios, using modelling, e.g. using combinations of TAD, 3-in-2 and OAD at different times of the year.

Figure 3. Illustration of the four farmlets in the 2019/20 experiment

Flexible Milking farmlet set-up



Early results from farmlet study

The LURDF study compares different milking strategies in four farmlets of 29 cows stocked at 3.5 cows/ha. Milking options are outlined in Figure 3. Milking intervals are 10/14 in TAD and 12/18/18 in 3-in-2.

Each farmlet is managed independently using the same set of decision rules. The amount of nitrogen applied, estimated pasture grown (based on weekly farm walk data), supplement fed and silage conserved to date are presented in Table 1.

Preliminary data indicate minimal production losses with 3-in-2. In spring, cows milked 3-in-2 produced 10 percent less milk, but had a greater MS percentage (9.6 versus 9.0 for 3-in-2 and TAD, respectively), equating to four percent less MS (Table 2). This effect appears consistent over summer for both the cows switched to 3-in-2 in December and the cows milked full-season 3-in-2. Further, there was a lower protein:fat ratio for 3-in-2, which, using the forecast 2019/20 Fonterra milk price, means the four percent difference in MS would be reduced to three percent in terms of revenue, due to the greater value of fat.

Somatic Cell Count (SCC) was greater with 3-in-2, by 12,000 to 15,000 cells/mL, but still relatively low. There have been nine cows treated for mastitis in the full-season 3-in-2 herd, and six in the other herds. Statistically, it's unlikely this will come through as a treatment effect.

Table 1. Cumulative amount of nitrogen, pasture grown, and silage made and fed season to date (February 20, 2020) for each farmlet (note: FS = full season)

| YTD figures | FS 3-in-2 | Dec 3-in-2 | Mar 3-in-2 | FS TAD |
|---------------------------------|-----------|------------|------------|--------|
| N applied (kg N/ha) | 144 | 144 | 144 | 144 |
| Pasture growth (t DM/ha) | 11.5 | 11.7 | 11.2 | 11.0 |
| Silage fed (kg DM/cow) | 214 | 105 | 142 | 96 |
| Silage made (t DM/cow) | 195 | 121 | 213 | 68 |
| Net silage (kg DM/cow) | -18 | 16 | 71 | -27 |

Table 2. Comparison of milk production parameters between 3-in-2 and TAD milking intervals during spring and summer (up to February 20, 2020)

| Parameter | Spring (Aug-Nov) | | | Summer (Dec-Feb) | | |
|----------------------------|------------------|--------|------------|------------------|--------|------------|
| | 3-in-2 | TAD | Difference | 3-in-2 | TAD | Difference |
| Yield (kg/day) | 20.7 | 23 | -10% | 18.4 | 20.4 | -10% |
| Milksolids (kg/day) | 1.97 | 2.05 | -4% | 1.75 | 1.82 | -4% |
| SCC (cells/mL) | 61,816 | 46,537 | 15,279 | 53,939 | 41,629 | 12,309 |

Early results from farmer interviews

Some insights from the interviews with the 12 farmers using 3-in-2 are shared below.

Grazing

We identified that the 12 farmers were using a range of grazing management/allocation approaches. Some offered a smaller area for the shorter interval (e.g. 12-hour), and larger for the longer intervals (e.g. 18-hour); others offered the same amount at each interval, assuming that because the shorter interval occurs during the day, when cows are active grazers, they could eat more in that time.

The farmers told us that the time of the year 3-in-2 is used, and subsequent grazing targets, has an impact on grazing management. A farm's paddock sizes influences the ease with which some rotation lengths can be achieved. The most effective strategy was to think about allocation on a 48-hour basis instead of 24-hour; the other advice was that it's easy to overcomplicate systems.

Mating schedule

Farmers were using a variety of options when milking 3-in-2 through mating:

- Mating after every milking
 - This was an option if the AI technician was flexible, or the farm was using DIY mating.
- Mating at the same time each day
 - If mating after the early morning milking, then cows to be put up on day two were selected at the evening milking on day one and grazed separately.
 - If mating after the 11 a.m. milking, cows to be put up on day one were selected at the early morning milking on day one and grazed separately.
 - If mating after the evening milking, then cows to be put up on day two were selected at the 11 a.m. milking and grazed separately.

3. Mating after the early morning milking on day one and 11 a.m. milking on day two
 - This was an option if the AI technician was flexible to be on site at slightly different times, to avoid the hassle of having a separate AI mob every second day.

Tanker schedule

Little change in tanker scheduling was required if the farm was on skip-a-day, unless the pickup coincided with a milking. However, on daily pickup, if the tanker came in the same window each day, the best approach was to reschedule, to avoid the time between the early morning and 11 a.m. milking (*Figure 4*). This prevented any potential flooding of the vat during peak lactation, and higher SCC and low volume on day two.

To sign up for updates on the Flexible Milking project, go to dairynz.co.nz/3in2

Figure 4. Tanker scheduling options assuming a daily pickup and the tanker coming in the same window each day



Key points

- Milking options are key to improving workplace attractiveness.
- Once-a-day milking may be less suited to high-producing farms (e.g. more than 400kg MS/cow) or with less ability to reduce costs.
- An alternative option, 3-in-2 milking, has gained popularity, particularly in the South Island.
- The new 'Flexible Milking' project will help farmers and advisers adopt, optimise, and/or support the use of 3-in-2.
- Early results suggest cows milked 3-in-2 produce about four percent less milksolids than twice-a-day at each stage of lactation.
- Interviews with farmers using 3-in-2 have identified options for grazing management, mating and tanker scheduling.



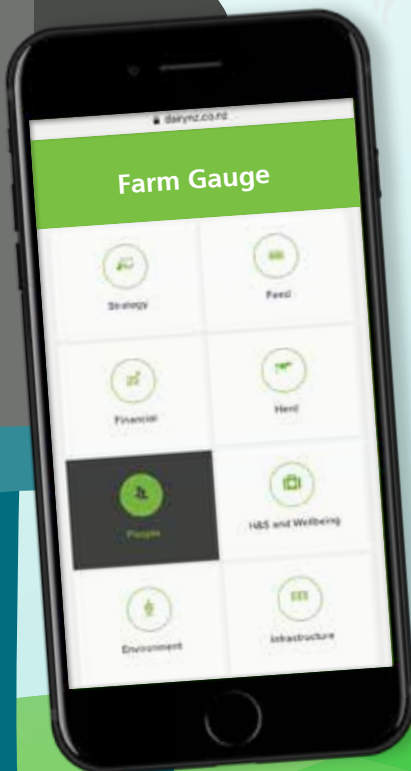
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