



over the fence...

In this edition of *Inside Dairy*, we focus on how small changes to your milking system can create big savings in time and money.

We all grapple with how to prioritise our time and resources to be as efficient as possible. And often it's not actually about milking faster or working harder – it's about optimising the equipment and people available.

A smooth-running milking system provides many benefits, and we explore some of them in this edition. Read about the life-changing results that Canterbury equity partners Shannon and Cass Rolls are experiencing after implementing DairyNZ's Milksmart techniques. The demand for these events has been strong, which reflects the importance to farmers of saving time.

On October 22, we'll hold our Annual General Meeting and find out who's been successful in the Board of Directors elections. At that time, we'll send you an email with the Annual Report that showcases where your levy was spent in 2018/19, what DairyNZ delivered on your behalf, and election details.

October is also a busy month for *The Vision is Clear* as we launch our latest activation: 'Do something tree-warding'. This promotion encourages every Kiwi to build a virtual forest (using the GrabOne platform) that will then be planted in autumn 2020 in locations that improve waterways. This is all part of our work to encourage the public to do their bit to look after waterways and promote what dairy farmers are doing in this space already. And great news – the way the public view dairying is already on the improve from earlier this year.

As this goes to print, the Government's Essential Freshwater package will be halfway through the consultation period, which finishes on October 31. Read more about this, including what it could mean for farmers and how DairyNZ is representing you, on page 18 of this issue.

Please get in touch if you have any questions or feedback –

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DairyNZ







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On the cover: Farm manager Ross Elliott and 2IC Anna Haywood work on the Southland farm of Shannon and Cass Rolls, who are reducing milking times using DairyNZ's Milksmart approach.

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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.



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TAKE 5... TIPS FOR FARMERS

1 Support your neighbour

With all the ups and downs of farming, it's important for farmers to keep an eye on each other – and to know where to get help if anything's amiss. If it's urgent, get them to their GP. You can also visit dairynz.co.nz/wellbeing for advice and a list of support organisations' contact details.

Vigilance with heat detection

If you're extending artificial breeding (AB), going all-AB or reintroducing AB with short gestation length semen at the end of mating, consider adding a different heat detection aid to your cows. Something new to look at can help tired eyes. More advice at dairynz.co.nz/heat-detection

Problems with payroll?

Having a reliable recording and payment system will ensure your employees are paid fairly and accurately – and it'll save you time and stress. Visit dairynz.co.nz/payroll for a list of providers and things to look for when choosing a system that best meets your needs.

Disbudding pain relief

From October 1, all cattle must be provided with effective local anaesthesia before disbudding or dehorning. Farmers who disbud their own calves will need to be trained by their veterinarian to administer a local anaesthetic block. Learn more about cost-effective pain relief at dairynz.co.nz/disbudding

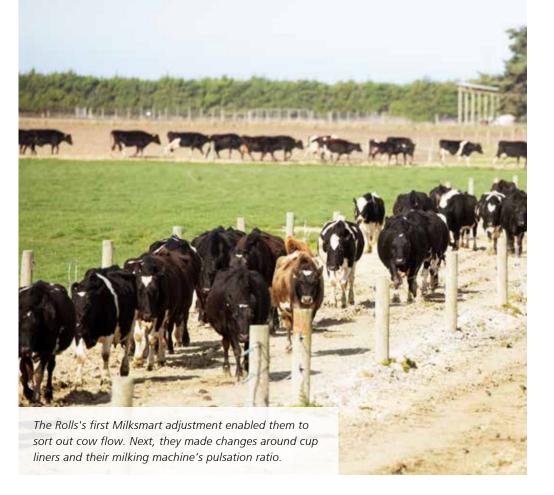
Want to spend less time milking?



Included in this issue of *Inside Dairy* is your Milking Smarter poster, with tips for cutting out wasted time and keeping cows flowing. The poster is printed on waterproof, tearresistant, environmentally friendly paper.

Put it up in the dairy as a practical reminder for your team.







Improving milking efficiency is one of the great wins for dairy farmers. It requires little extra cost but can produce life-enhancing results for everyone on-farm, as Canterbury equity partners Shannon and Cass Rolls have found after implementing DairyNZ's Milksmart strategies.

When Shannon and Cass's farm manager, Ross Elliott, went off to a DairyNZ discussion group last year, he returned bubbling with enthusiasm. He told Shannon that he thought the Milksmart approach might help to solve some of their milking problems.

Although Dunkirk Farm (owned by Shannon's parents) has a relatively new 60-bail rotary dairy with all the bells and whistles, the team was milking only 280 to 300 cows an hour.



"I wasn't quite sure how to improve this, but that all changed when we joined a regular DairyNZ Milksmart discussion group in February this year. We have since been to three of these and hosted one on the farm," says Shannon.

An expert eye

Before tinkering with the milking routine, Shannon attended the next Milksmart discussion group and sought advice from DairyNZ milking consultant Josh Wheeler, a recognised Milksmart expert from QCONZ. Shannon says Josh visited the farm, took a



When the rotary does a lap and this flag goes past, the milkers are reminded to move the main gate to bring up more cows.



Already a dairy feature before the team implemented Milksmart changes, auto teat sprayers save time and improve spray accuracy.

look at what they did and made several suggestions which have made all the difference.

The Rolls's cows are divided into two mobs of 475, milked twice daily at 16-hour and eight-hour intervals by different milkers. Shannon says that, before adopting Milksmart methods, he was seeing a variance of up to one hour a milking between milkers. But while he was keen to milk more efficiently, he certainly didn't want to cut corners.

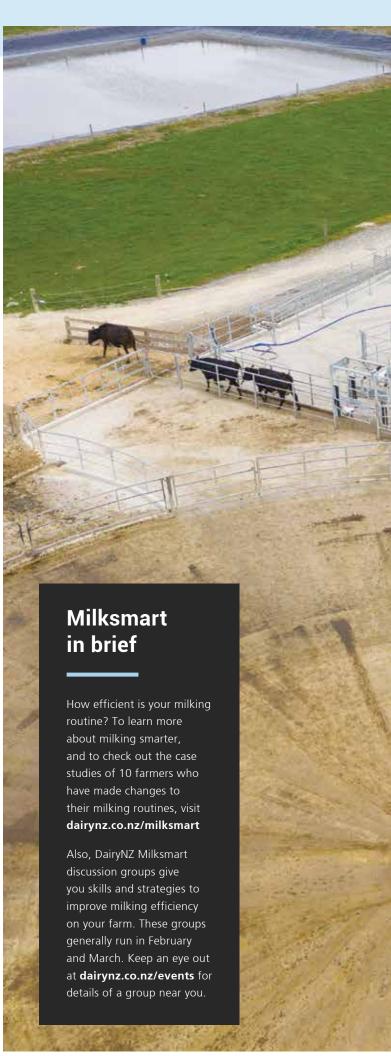
"I thought it would be beneficial to improve our milking times, but I didn't want that to come at the expense of cow health and doing the job properly," he says.

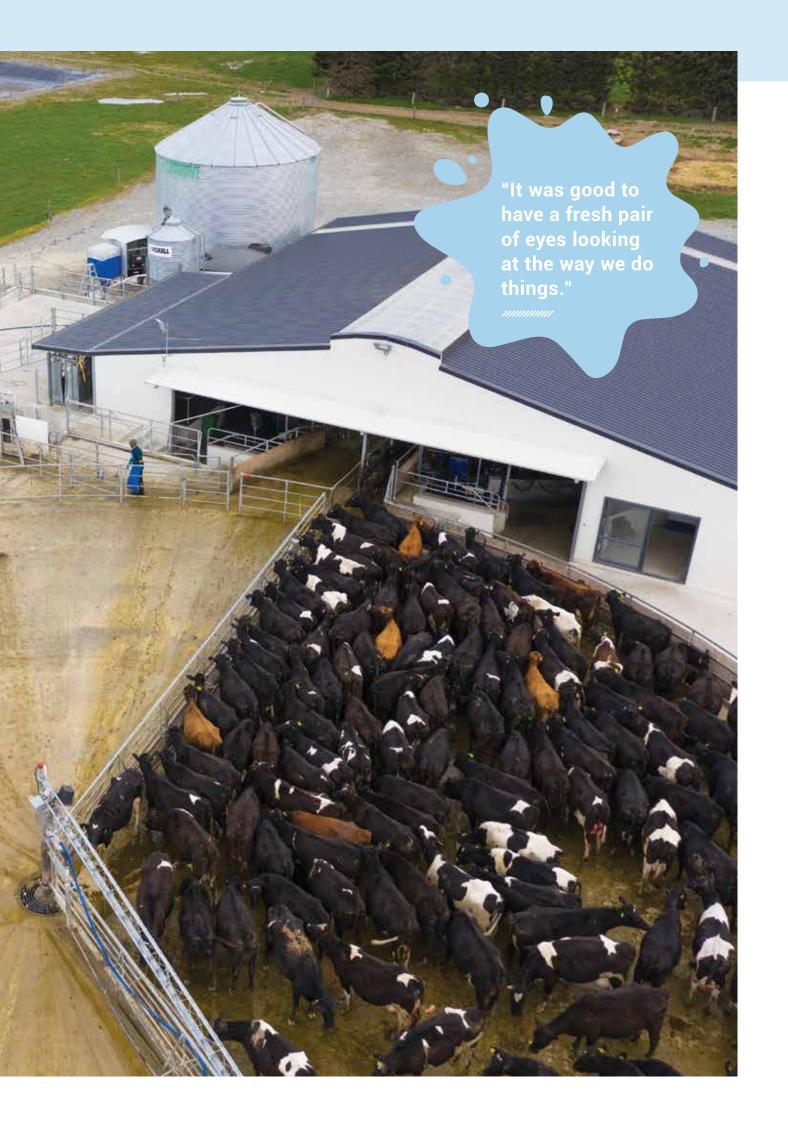
"It was good to have a fresh pair of eyes looking at the way we do things. Josh analysed our milking routine and told us that a few simple changes would improve our milking efficiency."

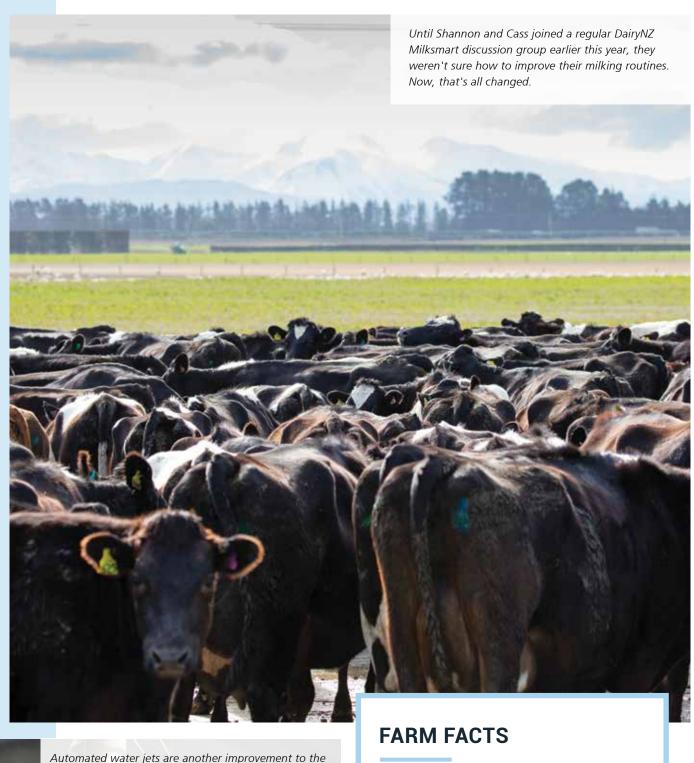
Getting a roll on

Shannon's number-one frustration was inconsistent cow flow. He discussed this with Josh, who says the difference between good and bad flow is often down to how staff control the backing gates in the yard.

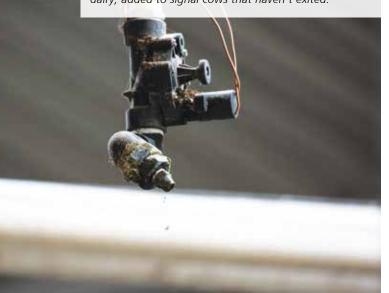
"When I visited the farm, I could see the cows would flow







Automated water jets are another improvement to the dairy, added to signal cows that haven't exited.



DUNKIRK FARM

OWNERS: Bruce & Susan Rolls

EQUITY PARTNERS: Shannon & Cass Rolls

LOCATION: Rakaia, Canterbury

SIZE: 252ha (effective)

HERD SIZE: 950 Friesian Kiwi-cross

DAIRY: 60-bail rotary

FARM SYSTEM: 4

PRODUCTION: 420,000kg MS/yr

Savings made at Dunkirk Farm



- Variance between milkers has been cut from up to an hour to just 10 to 15 minutes at each milking (aiming for one extra hour of savings during peak production).
- Work routine time (the time to complete all tasks for each cow) has been reduced from 9.7 seconds to 8.7 seconds/cow during peak production.
- Using MaxT, 100 percent of cows are now exiting every rotation.
- When MaxT was implemented in February (and milking time was shortened for 20 percent of cows), somatic cell count dropped by 10,000 cells/ml.
- By using MaxT, alongside other changes, they're aiming to increase cows milked/hour by 100 to consistently achieve 400 cows milked/ hour through peak.
- Team starts later and goes home earlier.
- Relief milker costs less.

well for the first hour because the yard was full. But because the main gate wasn't being moved up regularly to take the space of the cows exiting, there were gaps in the yard and it could take 15 minutes to recover. In the meantime, there would be empty bails and lots of stress for the milkers. Cows like consistent routines, so the more consistently milking is managed between staff, the better the cows will flow," says Josh.

The Rolls's first change was to put flags on the backing gates so the milkers can easily see them from where they're putting on cups. They also added a flag to one of the bails on the platform and wrote 'take the space' on it. Now, every time the rotary does a lap and the flag goes past, the milkers are reminded to move the main gate to bring up more cows.

In the box seat

Another of Josh's suggestions was to move the control box that controls the backing gate and platform speed. This allows the milkers to stand immediately next to the bridge, where the cows load.

"In many rotaries, milkers stand two or three bails away from the bridge and every bail you stand away costs you eight cows an hour. So, overall, Shannon was losing 24 cows an hour by staff standing three bails away from the bridge," says Josh. The Rolls have also covered the entry to the rotary platform so cows and milkers can't see each other. This has made it easier for the milkers to stand by the bridge and improve loading.

Other changes

Josh also suggested using MaxT (maximum milking time – see dairynz.co.nz/maxt-rotary or dairynz.co.nz/maxt-herringbone), where cows are milked to a pre-determined maximum time, either a fixed time point or a set milk flow rate threshold (if using automatic cup removers).

The objective of MaxT is to fully milk 80 percent of cows and shorten the milking time of the slowest 20 percent. Studies have shown this can be done with no impact on somatic cell count or production.

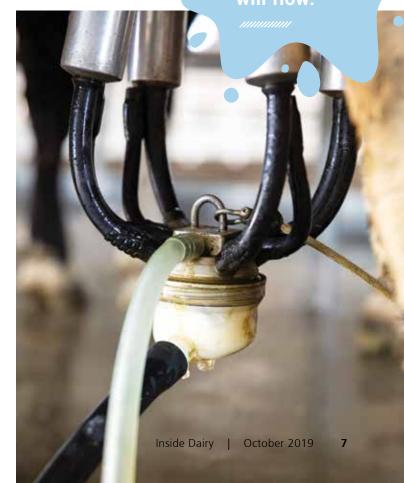
"Shannon has implemented MaxT using the same milking time for a.m. and p.m., 8.5 minutes/cow from cups on to cups off, based on their estimated peak production. He's aiming to shorten the slowest 20 percent of cows at the a.m. milking and the slowest five percent at p.m. milking. The current milking time

will be adjusted again post-peak production," says Josh.

"One of our aims with implementing MaxT was to ensure that every cow only did one rotation, so we milked by time and that improved cows exiting."

The cows have two

"The more consistently milking is managed, the better the cows will flow."





clear signals to help them exit. One is a thick anchor rope, which acts as a visual reference to help the cows know when they can safely back off. The other is an automatic water jet, which discourages cows from staying in the bail or trying to re-enter.

Gaining speed

Once the Rolls had sorted out their cow flow, they implemented other strategies to improve milking times. These centred around cup liners and changing the milking machine's pulsation ratio.

Cows hold a third of their udder milk in the front teats, and two thirds in the back. Typically, choosing cup liners is about finding ones that don't slip – but non-slip liners typically milk more slowly. To increase milking times, Josh advised the Rolls to use slip-resistant liners for the front teats, and fast milking liners for the back teats.

"Come spring, we're hoping these changes will gain us 30 seconds per cow," says Shannon.

To further speed up milking, the pulsation ratio on the milking plant was changed from 60:40 to 65:35. The Rolls milk at a 16-hour interval between the afternoon and morning milking, and an eight-hour interval between morning and night, so 66 percent of the milk is harvested in the morning.

"We wanted to speed up the milking machine to harvest that milk more quickly, so by changing the pulsation ratio, our speed of milking has improved by about eight percent," says Josh. "Because Shannon's got automatic cup removers and we're milking by time, there's no increase in over-milking."

Team buy-in

Shannon says learning about milking efficiency at a DairyNZ Milksmart discussion group got buy-in from the Dunkirk Farm team

"Everyone was supportive because they were involved from the outset and understood why we were making changes. We keep up to date by going to Milksmart discussion groups as often as we can. New staff members know exactly what to do because illustrations of milking procedures are on our smoko room wall."

Small changes, big results

In dollar terms, improving milking efficiency at Dunkirk Farm was relatively inexpensive. Shannon says they didn't have to make major infrastructure changes because the dairy shed is fairly modern, built in 2013. The incremental changes they've made over the last six months have cost less than \$2000.

"Milking efficiency is not usually a general topic of conversation, so it's good to be able to benchmark it and be willing to make small changes," says Shannon. "There doesn't need to be a big silver bullet. And it's not necessarily about working harder or faster; it's all about making the best use of the resources that you already have.

"Now that we've implemented Milksmart techniques, I've found that it's possible to reduce milking times but still do a proper job and also give the cows the same attention to detail."

■ Words: Christine Hartley ■ Photos: Tony Benny

Shorter milking attracts staff

Find out how milking efficiency helps to attract and retain staff through better labour management.

When long working hours on-farm become the norm, stress, fatigue and resentment can start to dominate daily routines. Often, sharemilkers or staff will move on to another farm where the work-life balance is better. On most dairy farms, milking accounts for more than 50 percent of staff hours – so it makes sense to target that area for efficiency, as savings can significantly reduce total hours worked.

That's why consultant Josh Wheeler (a recognised Milksmart expert from QCONZ) has been contracted by DairyNZ to work directly with farmer discussion groups and provide Milksmart workshops for rural professionals (see pages 10 and 11 of this issue).

His aim is to help farmers understand the value of DairyNZ's Milksmart efficiency programme and other similar approaches, such as DairyNZ's MaxT milking strategy. With MaxT, cows are milked to a maximum time – one that will shorten milking time for up to the slowest 20 percent of cows – see pages 14 and 15 for an explanation.

"Any dairy farmers who can provide better working hours for themselves and their team are more likely to attract and retain staff," says Josh. "Demand is outstripping the supply of suitable people for on-farm roles, partly because unemployment across the country is only four percent.

"On farms where milking times are more than three hours, staff are waking before 4 a.m. to go and get the cows. That's hard on the body, getting up at that time. So, if they can become more efficient at milking and start closer to 5 a.m., everyone can get a bit more time in bed. That's one of the main 'buy-ins' for many farmers and their staff.

"Implementing MaxT's milking strategy has been shown to be the most efficient way to milk cows. I've found that on-farm, MaxT provides benefits that are not only good for people, but also for cow health and the business's bottom line."

Josh has worked with plenty of farmers using Milksmart and MaxT who've saved between one to two hours a milking (or two to four hours a day if milking twice daily). The team can also plan around milking with more accuracy, thanks to more consistent finishing times.

"Farmers talk about 'labour saving', but they're not looking to cut back on labour. It's about redirecting it, so they don't need to add extra time onto the day to get other jobs done. It also frees up more time for better decision-making and for family, community and other non-work activities."

See pages 12 and 13 of this issue to find out more about the benefits of putting efficiency at the heart of your farm's milking routines – and visit **dairynz.co.nz/milking**

To find out what a great workplace looks like as outlined in DairyNZ's Sustainable Dairy Workplace Action Plan – visit dairynz.co.nz/wap



FARMERS BECOMING THE EXPERTS

DairyNZ is encouraging farmers who've had success with Milksmart to share their knowledge with others. It's all about farmers leading the change.

"All farmers want to know is, 'what can we do to improve milking efficiency and spend no money?'" says DairyNZ milking consultant Josh Wheeler, a recognised Milksmart expert from QCONZ.

Josh has been working with DairyNZ consulting officers (COs) through discussion groups and workshops for rural professional (RPs). The aim is to improve farmers' and RPs' understanding of what DairyNZ's Milksmart programme can achieve, to encourage farmer-led change.

"Once farmers have been shown how to have success with Milksmart, they can become the experts for others," says Josh.

He's also noticed that including milking machine company representatives into the discussion groups is slowly leading to better, stronger farmer-dealer relationships focused on getting the best out of Milksmart.

Spreading the word

There was huge farmer interest in Josh's presentations on Milksmart at several meetings of the Browns Discussion Group, Invercargill (with Central/Northern Southland CO, Nicole Hammond). It was the same story when he spoke at a new Milksmart-specific group in Canterbury (with Canterbury/North Otago CO, Ashley Smith).

"At Browns Discussion Group, we usually get around 25 people turning up," says Nicole. "But at our first Milksmart session early this year, we had to cap the numbers at 60. Two later meetings were also popular."

Ashley's new Milksmart group aimed to cap numbers at 30. "Within 24 hours of the invites going out, we were fully booked," she says. "Numbers grew over the next couple of meetings too. The interest was immense."

Why the interest?

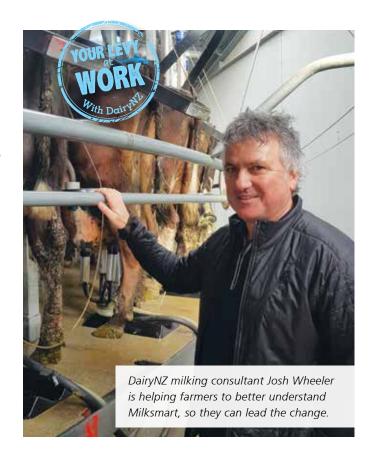
"No one wants to be standing on concrete for any longer than they need to," says Ashley. "Plus, with the larger farms in Canterbury, there were big gains to be made."

She also thinks people are starting to see the value in saving time with Milksmart and MaxT (Milksmart's 'milking to a maximum time' strategy) – see pages 14 and 15 of this issue.

"It's literally just changing the way you're doing things – without negative effects on anything else."

Nicole agrees and says there's a general interest among Southland/South Otago region's farmers in increasing on-farm efficiencies.

"It's been really hard filling roles on-farm and retaining staff



"All farmers want to know is, 'what can we do to improve milking efficiency and spend no money?'"

due to the low unemployment rate in Southland. Doing things faster, consistently and more efficiently saves a lot of time and is more comfortable for staff and cows."

Saved hours can also be better targeted to getting other things done on the farm within the working day. It all adds up to improving staff recruitment and retention (see page 9 of this issue for more on this topic).

Nicole agrees with Josh Wheeler's comments (see page 9) that milkers' efforts around Milksmart and MaxT also lead to better cow health and wellbeing, and improve a farm's bottom line too.

"You have a pyramid, and the people are at the top and anything within your business, whether it's cows, grass, efficiency, all flows down from that," says Nicole.



Milksmart Pro workshops

Four Milksmart Pro workshops were run in April this year to upskill rural professionals. One each was held in Ashley and Nicole's regions (specifically, Ashburton and Invercargill).

"It's a fantastic idea to do this," says Ashley. "There are a lot of myths – like MaxT will increase incidence of mastitis – which need to be busted first, and the science and farmer experience does this

"If RPs understand what Milksmart's all about, there'll be more ways for farmers to tap into that information. It also builds and strengthens networks between and among farmers and RPs."

More info

Check out dairynz.co.nz/milksmart and/or talk to your local CO about improving your farm's milking efficiency. See page 25 for contact details or check out dairynz.co.nz/CO



Sharing success stories

Southland

 Farm dairy: 44-bail herringbone, milking 440 cows with automatic cup removers (ACRs) and automatic teat sprayers.

This set-up provided an opportunity to increase the pulsation ratio to milk out the cows more quickly, activating the ACRS and improving milking efficiency by 16 percent.

One milker had been starting at cup one; the other, at cup 24. That changed to a 'bunny hopping' routine where one milked the first five to six cows; the other, cows seven to 12 – saving 45 minutes per milking.

Canterbury

• Farm dairy: 50-bail rotary, milking around 180 cows per hour with ACRs.

The milker was shifted to stand right by the bridge. The cupping technique was improved (to get them on within four seconds), allowing the platform to be sped up. That enabled the ACR threshold to be lifted, further speeding up the platform.

Cow throughput increased by about 150 cows per hour, initially saving about an hour of milking time (this should double at milking peak once the rest of the changes are implemented).

Get Milksmart now

Farmers

- See November's regional newsletter for upcoming Milksmart events; or ask your local consulting officer about them.
- Visit the new and improved dairynz.co.nz/milking
- Check out this issue's Milking Smarter poster, which features links to employee training videos.

Rural professionals

 Visit dairynz.co.nz/milksmartpro and register your interest for further events. A member of the team will get in touch with you.

FARMERS' MILKSMART SUCCESSES

DairyNZ's Milksmart milking efficiency programme has shortened milking times and provided added benefits. Here's a snapshot showing what farmers achieved in 2018/19 by using Milksmart.

These figures summarise 2018/19 farmer achievements through using Milksmart and/or MaxT, either as a Milksmart case study farm, or on farms worked with through DairyNZ's milking efficiency discussion groups.

See dairynz.co.nz/milking for more information

For details on our 2018/19 Milksmart case study farms, see dairvnz.co.nz/milksmart





discussion group farms tracked for milking efficiency

50% OR MORE



the average amount of time spent per working day by farm teams in the milking shed, before implementing Milksmart and/or MaxT

"The first impact Milksmart had was that we finished milking earlier. Staff can now get home for breakfast and at the end of the day, they're finishing 45 minutes earlier. Staff have better breaks, they're more relaxed and they're happier. We don't want people to be doing excessive working hours and milking efficiency plays a role in

Harry Rich,

general manager, Ata Rangi Pastoral Group, central North Island.

achieving that goal."

"I think we're saving 10 percent on our costs as a result of Milksmart, easy.

As a sharemilker it means quite a lot. That's money that I can use to increase my equity.

It's helping our business to be more productive, too."

Jonathon Power, sharemilker, mid Canterbury.



IN 2018/19

case study farms tracked for milking efficiency





the average time-saving per milking across all of the farms tracked



"Our cows now spend less time on concrete, so lameness has dropped. They now get 21 hours to themselves to 'be a cow' - that's changed their wellbeing. Our very low somatic cell count - around

100 over 1100 cows wasn't changed by going with the MaxT and speeding up our milking times."



Matt (and Jen) Davison, sharemilkers, Canterbury.



– number of case study farms that had a result of implementing changes

- the number of detrimental effects from using quality and milk production

UP TO 30 MINS

the average time saved per milking by case study farms milking 8-10 rows or rotations

30-60 MINS

the average time saved per milking by case study farms milking 10-15 rows or rotations

1-2 HOURS

the average time saved per milking by case study farms milking 15 or more rows or

"We were doing 240 cows an hour during peak, 300 during summer. Now it's 350 and 400. That means we're saving at least half an hour per milking. That's an hour a day in overall milking

time and two labour hours a day freed up to do other jobs on the farm."

Simon (and Mo) Topham, sharemilkers, Southland



13

Milking by time with MaxT

MaxT shortens milking times by as much as 30 percent. With no adverse effects on milk quality, production or cow health – and less time in the dairy for staff and cows – it's a win-win worth trying, says DairyNZ Lower North Island consulting officer Kate Stewart.

MaxT basic principles

MaxT stands for 'maximum milking time'. This is the maximum time cows should have the cups on, when 80 percent of the cows are fully milked and 20 percent of the slowest cows are still milking. This is because MaxT defers milk to the next milking where it can be harvested more efficiently.

Contrary to common myths, using this approach and leaving milk behind in the udder until the next milking has no negative effects on milk quality, milk production or somatic cell counts (SCC). As a result of implementing MaxT, farmers have achieved more cows per hour through the dairy, which helps to get people home earlier and cows in the paddock for longer.

Check out the MaxT concept video showing how milk is efficiently deferred – dairynz.co.nz/maxt-rotary and dairynz.co.nz/maxt-herringbone

How MaxT works

MaxT reduces or limits the time required to milk slow-milking cows, and efficiently defers milk. MaxT time is calculated from the average milk yield (litres) being produced, with 80 percent of the cows being fully milked within this time. New Zealand and Australian research has shown this doesn't affect milk production, SCC or teat health, but it does speed up row or round times, getting people and cows out of the dairy earlier.



Benefits of MaxT

For people:

- Less time in the farm dairy.
- Easy to determine the end of milking, as the milker only needs to ensure the MaxT time has passed.
- An easy way to know what speed the platform needs to be going at.
- Consistent milking end times.

For cows:

- A better, more consistent routine in the dairy.
- · Less time in and around the dairy.
- In a rotary, every cow learns to exit every rotation.

Implementing MaxT on-farm

- 1 Calculate cows milked/hour to establish current performance.
- 2 Implement when you have reasonable control of mastitis and SCC.
- Calculate MaxT time (see opposite page).
- Take cups off when the MaxT time has been reached (or, if using automatic cup removers, set the maximum milk-out time to the MaxT time).
- Get the whole team on board the incentive is that they spend less time in the dairy.

CALCULATING MAXT - TOP TIPS

ROTARY IMPLEMENTATION

Convert platform speed to its correlating round time and the time from cups on, to cups off in minutes.

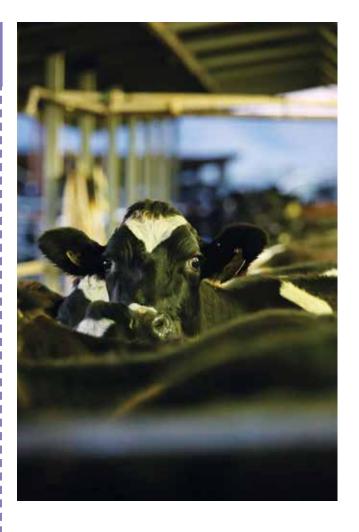
Have these numbers on the dairy wall so it's easy to look up the speed settings for each MaxT time.

HERRINGBONE IMPLEMENTATION

Use the timer on your phone. Start it when the first cow for that row is cupped. When the MaxT time is done, start changing cups consistently down the pit (make sure you don't miss any cows).

Calculation example

- Determine the mean daily milk yield per cow:
 e.g. 24 litres (L)/cow/day
- Calculate litres accumulated per hour (h):
 e.g. 24L ÷ 24h = 1L/h
- 3. Determine the hours between a.m. and p.m. milkings: e.g. 5 a.m. and 2 p.m. = 9h and 15h
- 4. Multiply litres accumulated per hour by hours between each milking:
 - e.g. 15h x 1L/h = 15L harvested at a.m.
 - e.g. $9h \times 1L/h = 9L$ harvested at p.m.
- 5. Look up these figures in the MaxT table to get your MaxT time: e.g. a.m. = 8:21 min:sec, p.m. = 5:48 min:sec



- Calculate your own MaxT time and view the table at dairynz.co.nz/maxt-herringbone or dairynz.co.nz/maxt-rotary
- Find out more about MaxT and other milking efficiency approaches at dairynz.co.nz/milking

FREQUENTLY ASKED QUESTIONS

1. Can you implement MaxT in a herringbone and a rotary?

Yes – it can be implemented in either type of dairy, with or without automatic cup removers.

2. What if my slow milkers are my highest producers?

Firstly, don't assume slow milkers are high-yielding cows. Often these are cows with low milk-flow rates. If you have several slow milkers or high producers you want to milk out fully, mark with paint to identify they're not for MaxT. Then milk these cows out fully at one milking a day. In a herringbone dairy, cup them as soon as you see them. In a rotary shed, send them around twice in the afternoon.

3. Do I need to have a different MaxT time for both milkings?

Some farmers have improved milking efficiency through adjusting the MaxT times slightly and implementing the same time for morning and afternoon milkings. This often results in less than 20 percent of cows being shortened in the afternoon, although less time will be saved compared to calculating the MaxT time for a.m. and p.m. milkings.

4. How often should I recalculate my MaxT time?

When using before peak, calculate using last year's peak volume. Post-peak, re-calculate weekly for maximum efficiency.



What's the impact of switching to full-season once-a-day milking? DairyNZ has been crunching the numbers, as senior scientist Paul Edwards explains.



Two approaches can be used to reduce time spent milking on-farm. Within a milking, options include milking to a fixed time (MaxT – see pages 14 and 15), cupping skills and optimising machine settings. The other approach is to reduce milking frequency – milking cows once a day (OAD) or three times in two days (3-in-2) – which is the focus of this article.

DairyNZ survey data from 500 dairy farms in 2018/19 indicated that 33 percent of farms milked OAD for part of the season, eight percent milked OAD for the whole season and 12 percent used 3-in-2 for at least part of the season – leaving 47 percent of farms milking twice a day (TAD) for the whole season.

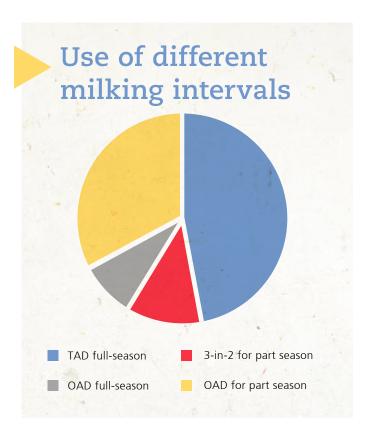
Examining full-season OAD

In the last few seasons, interest has grown significantly in milking full-season OAD, with a farmer interview on the topic being our fourth-most-watched video (check it out at dairynz.co.nz/full-season-OAD). In response, we've drilled into the numbers to gain a better understanding of the system impact of full-season OAD.

We used data from the Dairy Industry Good Animal Database to compare 302 herds milking full-season OAD with a control group of geographically similar herds milking TAD. Key results were OAD herds had:

- a five percent higher 3-week calving rate (59 v 64 percent)
- a five percent higher 6-week in-calf rate (60 v 65 percent)
- an 11 percent decrease in milksolids on average, dependent on the pre-OAD level of production:
 - Herds producing 300 kilograms of milksolids per cow (kg MS/cow) or less had a small or no decrease (25 percent of the national herd fit into this category in 2017/18).
 - Herds producing more than 400kg MS/cow had a greater decrease.

Our conclusion was that full-season OAD could be equally profitable as TAD if costs are reduced by as much as the reduction in milk revenue (lost milk production multiplied by the long-term milk price). See the December 2017 issue of *Technical Series* for more information – **dairynz.co.nz/technical-series**



Impact on profitability

Next, we used DairyBase data to determine if the OAD farms had achieved this cost reduction. Unfortunately, the small number of full-season OAD herds in DairyBase makes the analysis challenging. On average, the OAD herds had a 15 percent decrease in MS/ha and their profitability reduced, as their costs per hectare remained similar to the TAD farms.

We anticipated that labour efficiency (cows per full-time equivalent worker) would be higher with OAD – but it was not. To investigate this further, we grouped 33 of the OAD farms (those with multiple years of data) by their pre-OAD labour efficiency. The OAD farms that had been the least labour efficient (lowest quartile) before switching to OAD increased profitability by 23 percent; the next quartile essentially maintained profitability (-1 percent); and the two upper quartiles declined (-10 percent and -32 percent), although were still profitable.

In other words, the farms with high labour efficiency prior to switching to OAD struggled to improve efficiency or reduce costs further. This illustrates that the impact on profitability of switching to OAD is influenced by the pre-OAD system. One further point to note is that if going OAD postpones capital expenditure (e.g. continuing to use an old dairy), then this is an economic benefit.

"It's likely that full-season OAD suits considerably more farms than it's currently used on."

However, it's also worth considering the other common benefits of milking full-season OAD, such as more family time, and better lifestyle, staff retention and system operating flexibility (e.g. milking time). Milking outside of conventional milking hours could open up a potential new pool of people available to work on-farm.

These benefits are not captured in profitability, but can influence a farmer's decision to switch to OAD.

In summary, for those evaluating full-season OAD, estimate the likely changes to herd performance (e.g. production, reproduction) and farm management (e.g. impact on costs, particularly labour) and prepare a budget. The resulting budget should be considered alongside the intangible benefits and your personal goals to determine whether OAD is a good option for your circumstances. It's likely that full-season OAD suits considerably more farms than it's currently used on.

Key points

- **1.** The impact on profitability of switching to OAD depends on multiple factors.
- Farms that can achieve a lower reduction in milk production, or which have a greater ability to reduce costs, are more likely to maintain profitability.
- Prepare a budget incorporating the likely farm system changes and evaluate the result, bearing in mind the intangible benefits.



The greater potential production loss for higher producing herds switching to OAD milking, and the higher fixed costs on some farms (e.g. irrigation), mean OAD can result in poorer profitability. For these systems, 3-in-2 milking has been proposed as an alternative strategy.

Over the years, little research has been done on 3-in-2. The most relevant study – where a seven percent reduction in milkfat was measured over the full season – was presented at the Ruakura Farmers' Conference in 1985. However, payment systems and genetics have changed considerably since then, which is why DairyNZ kicked off a three-year study in July 2019, funded by the Sustainable Farming Fund and DairyNZ. Check out **dairynz.co.nz/flexible-milking** for more information and to subscribe to receive the latest updates.

YOUR LEVY

FRESHWATER PACKAGE – MAKE A SUBMISSION

The Essential Freshwater package could have a big impact on dairy farmers, so it's important to make sure your voice is heard.

In September, the Government released its Essential Freshwater package, proposing changes to the way freshwater is managed in New Zealand. The package includes a range of options that are now open for feedback.

"These proposals, if adopted, will have a big impact on dairy farmers, so we're strongly encouraging farmers to make a submission," says DairyNZ strategy and investment leader Dr David Burger.

"DairyNZ continues to work through the package's detail to ensure farmers have the information they need to have their say. We have some of this country's best water scientists, policy experts and economists analysing the proposal.

"Because we weren't involved in developing the package, we've had to look at every detail and assess whether the proposed changes will bring about the desired effects and how it will affect farmers. We'll provide this feedback in our submission, as well as viable and sensible alternatives where necessary."

David says DairyNZ agrees with the intent of the package.

"We're all striving for improved water quality outcomes, and the dairy sector has been on this journey for over two decades. We know there's more to do and have committed to continuous improvement through the *Dairy Tomorrow* strategy.

"At the same time, we need to be assured that these policies are underpinned by robust science and are based on outcomes. We welcome a focus on farm environment plans but have serious concerns about the new standards for instream nutrients. We're also looking carefully at the proposed rules for wintering, stock exclusion and further intensification, to ensure these are practical and build off all the work farmers have already done."

DairyNZ will share the technical analysis as it is available on the DairyNZ website, says David.

"We've already raised concerns about the tight time frames for submissions, and the Government has responded with an extension to October 31.

"We're working closely with our Dairy Environment Leaders and trying to capture as much feedback as possible from our regional events, the Ministry for the Environment's primary sector events, and your emails and phone calls coming into DairyNZ.

"We'll also continue to showcase the progress our sector has already made in looking after waterways, to ensure politicians,



the public and consumers are well informed. We also strongly encourage you to highlight, in your submission, all the great work you have already done."

Making a submission

DairyNZ is providing support around how to make a submission. A full submission is ideal but they can be short – you don't have to comment on every proposal or answer every question in the discussion document.

There'll be no hearings as part of process, so making a submission to the Ministry for the Environment is the only way to get your opinion heard.

Submissions must be made by 5 p.m. on Thursday, October 31. To make a submission, or to learn more about the proposal and DairyNZ's position, visit dairynz.co.nz/freshwater





With eight dairy farmers up for election to DairyNZ's Board of Directors, now's the time to cast your votes.

Levy-paying dairy farmers can vote now for their preferred candidates in this year's DairyNZ board election. There are two positions to be filled, and the successful candidates will play a key role in supporting DairyNZ's governance and leadership.

The 2019 Board of Director farmer candidates are:



Adrian Ball



Elaine Cook Hamilton



Tracy Brown Matamata



Conall Buchanan Paeroa



Stu Husband Morrinsville



Deborah Rhodes Collingwood



Simon Couper Waipu



Hugh Le Fleming South Canterbury

We've guizzed the candidates – get their take on priorities for dairy, DairyNZ and the future at dairynz.co.nz/agm

Get voting!

All DairyNZ levy payers should have received a vote pack in the mail (sent to farmers from September 23). Levy-paying farmers can vote online or by postal vote, using their pack.

If you have gueries or haven't received a vote pack, contact the election helpline: 0800 666 045 or iro@electionz.com

DairyNZ's board consists of five farmer-elected directors and three board-appointed directors. This year, directors Ben Allomes and Elaine Cook are both retiring by rotation. Ben is not standing for re-election.

No nominations were received for the Directors Remuneration Committee position, which reviews and recommends changes to directors' payments and other benefits to directors each year. The DairyNZ board will determine how to fill this vacancy.

The successful candidates for all positions will be announced at the DairyNZ Annual General Meeting (AGM) in Hamilton on October 22.

For more information, visit dairynz.co.nz/agm

Hear about DairyNZ's annual highlights



DairyNZ's 2018/19 year will be in the spotlight on October 22 during our AGM in Hamilton. Farmers are encouraged to join us at LIC's Tempero Centre from 7pm.

DairyNZ's 2018/19 highlights will be shared, including key research projects and investments, future priorities for DairyNZ, and voting on resolutions. Canapes and drinks will be available at the start of the meeting, with finger food to follow.

What:

DairyNZ AGM

When:

7p.m., Tuesday, October 22

Where: LIC's Tempero Centre -

605 Ruakura Rd, Newstead (Hamilton)

YOUR LEVY, YOUR BOARD, YOUR FUTURE

Does under-milking cause mastitis?

DairyNZ's SmartSAMM project manager Jane Lacy-Hulbert looks at whether leaving milk in the udder really does lead to problems with cow health and milk quality.



You may have heard that leaving milk in the udder leads to more mastitis, affects milk quality and lowers milk production. For many years, we thought removing all the milk at every milking was the right thing to do.

The positive results of strategies such as maximum milking time (MaxT — see pages 14 and 15) or changing automatic cup remover (ACR) settings to remove cups at a higher milk flow rate has been confronting to these views. But many farmers have discovered that strategies to reduce cow milking times and increase milking efficiency are also good for udder health.

What does the research show us?

In New Zealand, trials in the 2010s reported on the effects of MaxT or raising the ACR thresholds, for cows milked twice daily and with low somatic cell counts (SCC). Results showed no increase in mastitis or decrease in milk production, even when more than 0.7 litres of milk was left in the udder in some cases.

"Many farmers have discovered that strategies to reduce cow milking times and increase milking efficiency are also good for udder health."

Similar results were observed in Australia, where researchers concluded that incomplete milking (in their case leaving behind 0.5 litres) had no effect on SCC even for cows with mild, subclinical mastitis. That means cows with a higher SCC shouldn't prevent farmers from using strategies to improve their milking efficiency

What about gross under-milking?

Two international studies have explored the effects of gross under-milking for high-yielding cows, milked twice daily. In France, researchers found little impact on milk volume or SCC even if 30 percent of the milk volume was left in the udder at a single milking. But when comparing udders with both fully milked glands and ones with 25 percent of the milk left behind at each milking, researchers in America found some depression in milk production, and a doubling of the SCC over a six-week period.

Both studies led to much greater volumes of milk retained in the udder after milking compared with MaxT; neither reported increases in the risk of mastitis.

A DairyNZ animation shows what happens to milk retained in the udder when MaxT is applied. Check it out at dairynz.co.nz/maxt-herringbone and dairynz.co.nz/maxt-rotary

What is SmartSAMM

SmartSAMM is all about using a Smart and Seasonal Approach to Minimise Mastitis. It provides tools and resources to help dairy farmers and advisers better manage mastitis and milk quality. It covers everything from what mastitis is and why it's important, to the best ways to manage it on a seasonal basis and where to get help.

Find out more at dairynz.co.nz/mastitis





Learn more at dairynz.co.nz/mastitis

Managing your working bulls

When the bulls go in after artificial insemination has finished, there's a sigh of relief on farms across the country. Stop the hard work going down the drain by focusing on the bull mating period for best results.

Get the right number of bulls

When bulls are run with the herd after artificial breeding (AB), at least one bull is required for every 30 cows still not in calf. But at the end of AB, you don't know how many cows are already in calf and how many will return.

If the herd is managed during mating in separate herds, estimate the bulls required for each herd at any one time. Always round up numbers to the nearest bull and never run fewer than two bulls with any herd or mob.

If you used a synchrony, don't forget to at least double the ratio of bulls for a six-day period when these cows are due back on heat (18 to 24 days after first synchronised insemination). Or consider reintroducing AB to cover this period.

To estimate the number of bulls required, visit dairynz.co.nz/bull-management

Bulls arriving on-farm

Bulls should arrive properly identified and with details of their movement history and health status of the herd they've been in. Ensure NAIT records are completed within 48 hours of arrival.

On arrival, the bulls should be held separately from the main herd for at least seven days and monitored for any signs of ill health. If you have any concerns about the bulls' health, contact your veterinarian before you mix the bulls with the herd.

Roster bull rotations

Bulls need breaks to keep them keen and interested, and for maintaining semen viability. You need additional bulls to allow for regular bull rotations. Swap bull teams in the milking herd daily, if possible, especially over a synchro-return period.

- A 'half-resting, half-working' bull rotation policy will require double the number of bulls.
- As mating progresses, fewer bulls will be needed as the number of non-pregnant cows decreases. If in doubt seek advice.



Focus on healthy, happy bulls

Replace bulls that become inactive or unhealthy. High temperatures caused by fever or heat stress affect semen production and increase the number of abnormal semen. Even slight increases in body temperature (one to two degrees Celsius) can cause major disturbances in semen production.

Once a bull recovers from fever or sickness, it can take two months for normal fertility to be regained. Therefore, he won't be useable for the remainder of the mating period.

Watch out for signs of a broken penis, a penile haematoma, low libido and hip or back injuries. These conditions will prevent affected bulls getting cows pregnant. If dominant bulls are affected, they'll also prevent other bulls in the mob mounting.

Key points

- 1. Monitor bulls for lameness each day, immediately removing lame bulls and replacing with healthy bulls.
- Regularly observe bulls to ensure they're serving correctly, immediately removing bulls that aren't and replacing them with more capable bulls.
- **3.** Consider reintroducing or extending AB if bull numbers are ever an issue. Talk to your AB company for advice.

just quickly

Milking injury survey

DairyNZ recently surveyed 560 farmers about any milking-related injuries or near misses that had occurred in the last year. This was part of a project funded by WorkSafe, with the goal of making milking safer and easier for people.

Check out high-level results of the survey in the graphics below. The full results will be used by a group of industry stakeholders to identify potential practical and cost-effective solutions to consider for testing.



18% of farms had injuries in the last 12 months. and there were 1.5 near misses per injury.

48%

of injuries happened when farmers were attaching

clusters, making it the most accident-prone activity.

This was consistent with the most common body parts being injured:



22% hands/wrists



21% arms



15% fingers

DairyNZ scholarship applications open

Know someone who could be eligible for a DairyNZ scholarship? Scholarships

for agriculture or agricultural-related degrees are now open.

Scholars not only receive financial support, but also invaluable mentoring and networking while studying.

There's \$250,000 worth of scholarships available. Year 1, 2 and 3 students are encouraged to apply.

More than 85 percent of DairyNZ's past scholarship recipients now work in a dairy-related career. So, if you know a potential candidate, please refer them to dairynz.co.nz/scholarships

Applications close December 7, 2019.

DairyNZ's **Economic Survey** regional summary

Quite simply, dairy delivers a better way of life for all New Zealanders. The nutritional benefits are well documented, but now you can find out more about dairying's economic benefits too. We've summarised what dairying earns nationally – and in each region - in Gross Domestic



Product (GDP) and the jobs our sector provides, both on-farm and in processing.

Check out these figures and what DairyNZ's principal economist, Professor Graeme Doole, has to say about them at dairynz.co.nz/ES-regions

You can also download DairyNZ's 2017/18 Economic Survey (full report) at dairynz.co.nz/economicsurvey

Biosecurity Response Levy in effect

On September 1, the Biosecurity Response Levy came into effect to fund the dairy share of the Mycoplasma bovis response. We consulted with farmers earlier this year and listened to your feedback (more than 1700 farmers responded). We considered many options when setting the rate for this year, which has been set at 2.9 cents per kilogram of milksolids (until May 31, 2020).

The levy will be managed by DairyNZ and administered by milk supply companies. On your milk docket, it will show as 'Biosecurity Response Levy'.

Find out more at dairynz.co.nz/biosecurity-response-levy





Get pumped for effluent expo

Head along to this year's Effluent and Environment Expo for everything you need to manage and plan your whole farm effluent system.

After another successful event in 2018, the Effluent and Environment Expo (for farmers nationwide) is returning to Waikato's Mystery Creek Events Centre on November 19 and 20.

More than 90 exhibitors will be available to give advice on all your design, storage, containment, management, application and technology needs to future-proof your farm system.

DairyNZ is sponsoring the two-day event and will be onsite with resources and independent advisers.

Seminars led by industry experts, including some from DairyNZ, will provide a great opportunity to ask questions and get involved in discussions with other farmers.

This year's keynote speaker is former All Blacks coach, Sir Graham Henry, who will speak after exhibits have closed on Tuesday afternoon.

Amanda Hodgson, who owns and run the event with husband Matt, says they've launched a new strategy for the expo in 2019, in response to pressure from farmers wanting more answers on managing their total environmental footprint, including effluent management.

"Management of a farm's total environment is under the spotlight more than ever, so farmers are asking for wider solutions than just how to manage effluent around their dairies or dairy housing systems," she says.

"Effluent management is still the expo's primary focus for now, but we can see potential to broaden that out to offer farmers advice, products and services across the entire farm environment package."

Meanwhile, DairyNZ's biosecurity experts will be on hand to talk about simple steps to protect against disease, pests and weeds. Waikato Regional Council, Ministry for Primary Industries and OSPRI will also be on the biosecurity stand to help answer questions and to check your NAIT account.

Entry is free and farmers can choose to attend one or both days. Please register online to secure your seat in the seminars – **effluentexpo.co.nz**



Certification and WOF scheme

At the expo, farmers will have access to companies that have been through an accreditation process.

DairyNZ worked with partners to set up training and tools to help designers of effluent management systems attain accreditation, which is an assessment of competency.

The Farm Dairy Effluent System Design Accreditation programme is administered by IrrigationNZ and funded by DairyNZ. It requires the design organisations to demonstrate systems and processes that provide assurance of good design practice resulting in fit-for-purpose effluent systems.



There are 18 accredited companies – find one close to you at **effluentaccreditation.co.nz** and at the expo.



Farmers can also learn more about the Dairy Effluent Warrant of Fitness programme, which allows you to get your system assessed by a trained and certified independent professional. Visit dairynz.co.nz/wof

regional update

October events

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
	1	2	3	CANTERBURY/NORTH OTAGO The Methven Discussion Group n 10.45 a.m. and 1 p.m. at a host investigate its farm system and farm-relate		meets between t farm to
7	TARANAKI (venue to				med). For more inforr 027 513 7200.	
14	15	WAIKATO This month's Otorohanga South Discussion Group get-together on a local host farm will be between 11 a.m. and 1 p.m. (venue to be confirmed). Contact Denise Knop for details on 027 513 7201.			19	20
21	22	23	LOWER NORTH ISLAND Adam Scott hosts the Masterton/Carterton Discussion Group on his Masterton farm between 10.30 a.m. and 1 p.m. Topics include an update on water use in the Pukaha to Palliser Catchment a chat about			
28	29	30	summer crop optio	ns and planning.		

FOR A FULL LIST OF WHAT'S HAPPENING THIS MONTH, VISIT

DAIRYNZ.CO.NZ/EVENTS

NORTHLAND

Now calving's over, take some time off-farm to catch up with other farmers at a discussion group this month.

Your local consulting officers have scheduled events for around the region that will look at a range of topical discussions and farm management practices.

Get the event details and learn more about what topics we'll be covering at **dairynz.co.nz/events**

BAY OF PLENTY

"Thriving integrated farming in a strongly networked community, shaping and meeting expectations, and enduring into the future."

That's the vision for dairy farming in the Bay of Plenty, identified in the DairyNZ-led collaborative project, Plans for Regions.

This project brought together farmers, rural professionals and local governments, identified a set of current and future priorities for each region and set out what to do in response – including research, development, adoption, communications, and policy work. Visit dairynz.co.nz/p4r

TARANAKI

lan Burmeister has recently joined the Taranaki team as our new consulting officer for Northern Taranaki.

Born and raised on a dairy

graduate consulting officer.

farm in Mangatainoka, Ian studied a Bachelor of AgriScience at Massey University. He's worked on both large- and small-scale dairy farms in Canterbury and Manawatu. He joins our team after spending the earlier part of 2019 as a Lower North Island

He is excited to be moving into a new region and is looking forward to meeting new farmers and learning their systems. See the full team at dairynz.co.nz/co



DairyNZ consulting officers

LOWER NORTH ISLAND

What is the vision for dairy farming in the Lower North Island? What are its priorities and what does 'good' look like?

Over the last year or so, DairyNZ has led a collaborative project called Plans for Regions, which brought together farmers, rural professionals and local governments. They identified the current and future priorities for each region, including Lower North Island.

To find out what DairyNZ and the dairy sector are planning to do in response – including research, development, adoption, communications, and policy work – visit dairynz.co.nz/p4r

TOP OF SOUTH ISLAND/WEST COAST

Financials and profitability will be a big focus this season on the West Coast, so now is a great time to take a look at DairyNZ's DairyBase.

DairyBase helps you better understand your farm system and its performance, by comparing key performance indicators and determining what's working well, then identifying opportunities for improvement.

DairyBase offers two types of benchmarking – the business's financial performance and the farm's physical aspects – and compares them to sector standards or targets. Find out more at dairynz.co.nz/dairybase

CANTERBURY/NORTH OTAGO

The DairyNZ Canterbury profitability comparison continues the financial benchmarking that has previously been conducted by Lincoln University Dairy Farm (LUDF) and the South Island Dairy Development Centre (SIDDC). The 2018/19 season data will be shared at the next SIDDC focus day on October 10 at LUDF.

For further information on the profitability comparison or the Canterbury Benchmarking group, contact DairyNZ farm business specialist Robb Macbeth at

robb.macbeth@dairynz.co.nz

SOUTHLAND/SOUTH OTAGO

Getting the best possible reproductive performance from your herd requires attention to detail in a number of key areas. Southland's ReproSmart workshops this month will look at some key areas you can influence during this time of year.

Assess your past performance, create a mating plan for your farm and get some practical tips for successful heat detection.

These informative sessions will cater for the whole farm team. Chat about your farm's mating challenges with other farmers at one of these workshops, you'll find more details at dairynz.co.nz/events

Upper North Island – H	- - - - - - - - - - - - - - - - - - -	027 492 2907					
Northland							
Regional Leader	Tareen Ellis	021 242 5719					
Far North	Amy Weston	027 288 6460					
Lower Northland	Hamish Mathews	027 499 9021					
Whangarei West	Ryan Baxter	021 809 569					
3	пушт важет	021 003 303					
Waikato							
Regional Leader	Wilma Foster	027 246 2147					
South Auckland	Mike Bramley	027 486 4344					
Hauraki Plains/Coromandel	Jaimee Morgan	021 245 8055					
Te Aroha/Waihi	Euan Lock	027 293 4401					
Cambridge/Hamilton	Lizzy Moore	021 242 2127					
Huntly/Tatuanui	Brigitte Ravera	027 288 1244					
Matamata/Kereone	Frank Portegys	027 807 9685					
Pirongia	Steve Canton	027 475 0918					
Otorohanga/King Country	Denise Knop	027 807 9686					
Arapuni	Kirsty Dickens	027 483 2205					
Bay of Plenty							
Regional Leader	Andrew Reid	027 292 3682					
Central Plateau	Colin Grainger-Allen	021 225 8345					
Tokoroa	Angela Clarke	027 276 2675					
Eastern Bay of Plenty	Ross Bishop	027 563 1785					
Central Bay of Plenty	Kevin McKinley	027 288 8238					
Lower North Island –	,						
Taranaki							
Regional Leader	Mark Laurence	027 704 5562					
South Taranaki	Nathan Clough	021 246 5663					
Central Taranaki	Mark Laurence	027 704 5562					
Coastal Taranaki	Mark Laurence	027 704 5562					
North Taranaki	Ian Burmeister	027 593 4122					
Lower North Island							
LOWER NOTH ISIANA							
Horowhenua/Coastal and South Manawatu	hern Kate Stewart	027 702 3760					
Wairarapa/Tararua	Rob Brazendale	021 683 139					
Hawke's Bay	Gray Beagley	021 286 4346					
Northern Manawatu/ Wanganui/Woodville	Jo Back	021 222 9023					
Central Manawatu/Rangitikei	Richard Greaves	027 244 8016					
South Island – Head:	Tony Finch 027 706 6	5183					
Top of South Island/West							
Nelson/Marlborough	Mark Shadwick	021 287 7057					
West Coast	Angela Leslie	021 287 7037					
	, angela cestie	32.2772034					
Canterbury/North Otago	n 1 12 "	027.264.2252					
Regional Leader	Rachael Russell	027 261 3250					
North Canterbury	Amy Chamberlain	027 243 0943					
Central Canterbury	Natalia Benquet	021 287 7059					
Mid Canterbury	Stuart Moorhouse	027 513 7200					
South Canterbury	Heather Donaldson	027 593 4124					
North Otago	Alana Hall	027 290 5988					
Southland/South Otago							
Regional Leader	Ollie Knowles	027 226 4420					
West Otago/Gore	Lucy Hall	027 524 5890					
South Otago	Guy Michaels	021 302 034					
Central/Northern Southland	Nicole E Hammond	021 240 8529					
Eastern Southland	Nathan Nelson	021 225 6931					

Leo Pekar

Western/Central Southland

027 211 1389

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