The Australian Dairyfarmer

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Talking to the right people

ANIMAL extremists hit the headlines again last month as they staged a series of high-profile protests, raiding farms across Australia and blocking metropolitan streets. They used social media to broadcast their actions in an attempt to gather new supporters to their cause.

Some of the discussion between farmers and activists on social media was pretty ugly.

It made me think about the address to the Australian Dairy Conference by the head of the International Dairy Federation Dr Judith Bryans. She told the conference there was no point in arguing with vegans.

"We have almost a religion and an ideology around plant-based," she said. "I would never say go and fight with vegans, there's no point.

"They're vegans, they've chosen their ideology for their reasons, but what we need to do is to get to the people who still want to have dairy, who still love dairy but who are feeling guilty about it because of all the things they see."

It was a telling argument. Much like any religious or other fundamentalist group, there is simply no point in arguing with someone in a logical fashion whose beliefs are based on a different philosophical view of the world.

But the other important point was about making sure we are talking to the people who still want to consume dairy but are being made to feel guilty about it.

And that's a lot more people than we sometimes think when we read the stories about all the alternative milk products on the market.

Dairy Australia's Melissa Cameron also spoke in that conference session. Her big take-home message was that there were a lot of myths about the growth and domination of these other products. In fact, the alternatives market share of supermarket sales was just 7 per cent and it had grown by only 2 per cent in a decade.

There were some concerns in how people perceived these alternatives — which were seen to be healthier and more natural, despite a huge list of not-so-natural-sounding ingredients. These alternative milks were trying to match the taste and mouthfeel of dairy milk.

I saw a coffee chain manager spruiking about oat milk the other day. Interestingly, the point being made was that oat milk had "smashed" almond milk and soy milk in the US because it was creamy, like dairy milk. It was clear the alternatives were fighting each other and the big win for oat milk was that it was more like dairy milk.

The other point made at the Australian Dairy Conference by Beef and Lamb NZ independent director Melissa Clark Reynolds was that food was about love: people prepare food for their families and for those that they love. It's not just about nutrients, it is about food and the culture around food.

So what does this mean for the average farmer on social media?

Well, firstly, there's no point arguing with a vegan.

Secondly, try to talk to the people who still want to eat dairy. Be respectful, answer questions, tell them about what you do and how you do it.

Thirdly, talk about the naturalness of dairy milk. Explain there's simply nothing in it except milk. And talk about it being a fantastic food.

And finally, talk about how much love and care goes into what you do everyday. D

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The Australian Dairyfarmer

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Call to crackdown on vegan protestors

Key points

- ✔ Police resources need to be allocated to protect farmers
- ✔ Protests act of intimidation
- ✔ Need to protect privacy of farmers

DISTRESSED farmers are urging state and federal lawmakers to crack down on bullying against regional communities amid safety fears sparked by vegan protests across Australia. Peak dairy farmer group Australian Dairy Farmers (ADF) has called for all state governments to beef up trespass laws to include imprisonment and a minimum fine equal to the cost of police intervention.

"It is critically important that each state allocates police resources to these matters and provides a directive for officers to remove and prosecute offenders," ADF president Terry Richardson said. "This campaign of bullying, intimidation and harassment by militant vegans must stop, and the only way we will see a deterrent is for strong and binding penalties to be put in place."

The current penalties for trespass offences vary between states, with NSW imposing a maximum fine of just $1100 for breaches under section 4 of the Inclosed Lands Protections Act 1901, while in Western Australia, section 70 of the Criminal Code Act Compilation Act 1913 offers a maximum penalty of 12 months' jail time and a $12,000 fine.

Mr Richardson said more transparency was needed around sentencing for farm trespass related offences across jurisdictions. "Governments need to implement rigorous reporting around the enforcement of trespass laws so that we can understand how effective the penalties are in deterring this destructive behaviour," he said.

Protesters last month blocked major intersections in capital cities and organised demonstrations outside abattoirs across the country.

Mr Richardson slammed the protests as a disgraceful act of intimidation. "Farmers are just trying to do a job, just like everyone else, and they deserve the freedom to do run their businesses without harassment or intimidation," he said.

Animal rights protesters block the intersections of Flinders and Swanston Street during early morning traffic in Melbourne last month. Photo David Crosling

"Australia has some of the highest animal welfare standards in the world, and our farmers care enormously for their animals. State and federal governments need to act now to preserve the peace and ensure regional communities are protected."

'This campaign of bullying, intimidation and harassment by militant vegans must stop...'

The call comes after the federal government last month listed radical group Aussie Farms under the Privacy Act, exposing the organisation to potential penalties of more than $2.1 million if it breaches the Act.

Earlier, Attorney-General Christian Porter committed to introducing a new offence designed to protect primary producers from the unlawful actions of animal activists if the Coalition is returned at the May election.

"We have seen with Aussie Farms the malicious use of personal information, including farmers' names, addresses and workplaces, designed specifically to encourage others to trespass on properties and damage businesses," Mr Porter said.

"This is not acceptable and the Morrison Government will, if re-elected, introduce a new criminal offence specifically designed to protect Australian farmers from the sort of vigilante action we have seen this week.

"Penalties of up to 12 months' imprisonment will apply to individuals who use a carriage service, such as the internet, to disclose personal information with the intention that another person would use that information to trespass on agricultural land. The law would also apply to other primary producers such as abattoirs."

The new laws would include appropriate exemptions for bona-fide journalists and for situations where the information being released shows a law being broken, such as whistleblowing on animal cruelty.

Agriculture Minister David Littleproud said farming families deserved protection. "If you use the personal information of our family farmers to incite trespass then you deserve to go to jail," he said. "Farming families grow our food and there are children on these farms. Now states must beef up farm trespass laws — if 100 of my mates stormed a house in Sydney we'd expect to be locked up and farmers deserve the same protection." D

Battles on many fronts

Key points

- ✔ Industry facing issues in several key areas
- ✔ Fodder and water trading at near-record prices
- ✔ Visa changes welcomed

By **Terry Richardson**
ADF president

Each day begins with people on more than 5500 individual farms sending milk off to be processed.

THE dairy industry is in the fight of our lives on a number of fronts. While the drought continues, fodder and water are trading at record or near-record prices.

For irrigators in northern Victoria, where the average price for water was recorded in February at $499 per megalitre, this is nothing short of a catastrophe. That's a $79/ML increase since the month before and 420 per cent higher than it was a year ago.

The current situation is untenable and must be addressed before we lose more farmers.

On a broader scale, I was in Canberra in March for the start of third round negotiations between Australia and the European Union over a new free trade agreement.

The EU is continuing to drive a hard bargain by pushing for the inclusion of geographical indications (GIs) in the agreement, banning Australian dairy manufacturers from using product names which have a connection with EU countries, such as Parmesan and Fetta.

If the federal government caves to this demand, the dairy industry faces losing 22,000 tonnes of cheese varieties with an annual value of production worth more than $180 million and export sales averaging more than $55 million.

Even more worryingly, if Brussels succeeds in forcing us to extend GIs to capture packaging that evokes EU regions, a further 45,000 tonnes of local cheese production will be affected, averaging $300 million in domestic and export sales per year.

This is truly alarming for our industry, which is still the third largest agricultural industry in Australia.

And if we are serious about growing the Australian dairy industry, we must also work constructively to solve the industry's skilled labour shortage.

After scrapping the sub-class 457 visa last year and replacing it with a Temporary Skills Shortage (TSS) visa, which blocked a pathway to permanent residency for skilled migrants looking for work on dairy farms, the federal government has now brought us a step closer to securing a permanent skilled workforce.

Under changes to the Australian Skilled Occupation List, high-level dairy farm managers who have responsibility for overseeing farming operations are eligible for TSS visa entry to Australia for up to four years with the possibility of renewal and permanent residency via the 187 visa.

The pathway to permanent residency is vital to ensuring Australian dairy farmers can attract skilled overseas workers who will avoid Australia if they can obtain permanent residency in other countries.

This outcome is good news for farm owners. The experience of regional communities around Australia is that migrant farmers not only fill labour shortages, but they also bring with them new technological insights gained overseas to apply to Australian farming and revitalise local communities.

The industry has also achieved a victory in breaking the back of the despicable discount milk marketing ploy that has dogged us for eight long years.

Woolworths, Coles, ALDI and Costco have all raised the price of their cheap milk by 10 cents, with the increase going back to farmers. IGA is slowly following.

There is no denying that this is a great outcome, but while some producers have gained substantially from this initiative, most farmers won't receive much benefit.

It at least sets the stage for a larger conversation around the value of the entire dairy cabinet, but it is vital that all dairy farmers receive a fairer return for their hard work.

But while we speak about the industry, we must remember that it begins each day with people on more than 5500 individual farms sending milk off to be processed.

Every dairy farm relies on the commitment, enthusiasm, and hard work of these people for success.

However, I know from my own experience that dairy farming can be tough, and sometimes you have to reach deep for the commitment to get to the day's end.

The nights can then be long, wondering what the next day will bring.

But I also know from experience that it is important to never think you are alone when there is uncertainty.

I count myself fortunate that I reached out, shared problems and talked issues through. I encourage anyone who finds themselves in a tough spot to do the same.

Even more important is for each of us to open the conversation with someone who might be in that position. D

Stakes high in federal election

Key points

- ✔ Several rural seats to play key role in federal election
- ✔ ADIC identifies several major issues
- ✔ Vote for a fair go for dairy industry

By **Terry Richardson**
ADF president

AUSTRALIANS will head to the polls on May 18 to cast their vote for who will govern the country for the next three years.

The stakes are high for all sides, with both major parties holding a slew of seats on narrow margins.

In Victoria, several seats are in play. In the state's south-west, Corangamite which includes dairy regions around the rural centre Colac, is held by Liberal Sarah Henderson on just over 3 per cent.

In the north, Independent Cathy McGowan's retirement as the Member for Indi has thrown that seat back into play. Irrigators along the Murray River will no doubt vote for who they believe has a better vision for the Basin Plan.

Up in Central Queensland, the rural seats of Capricornia and Flynn, sitting just on either side of 1pc, offer another opportunity for farmers to play a deciding role in how the election plays out.

This will be a tough-fought campaign from all sides. But I expect it will be toughest in the regions, where farmers and rural communities have the power to determine who will form the next federal government.

The Australian Dairy Industry Council has worked with farmers and dairy processors to identify a list of priorities and actions across trade, sustainability and resource management that the next federal government should deliver.

Integral to securing a more sustainable dairy industry is an ambitious trade agenda. We are asking that the next government ensures high quality, comprehensive outcomes for dairy in free trade deals with India, the Gulf Cooperation Council, Taiwan and Pacific Alliance, and the Regional Comprehensive Economic Partnership.

The federal government must continue to invest in climate change mitigation research, and extension programs, as well as provide funding for drought preparedness programs.

Irrigators along the Murray River will no doubt vote for who they believe has a better vision for the Basin Plan.

We are also advocating for tax relief to businesses installing or upgrading to more energy efficient or renewable energy systems.

> ***'Everything we are trying to achieve is to contribute to a profitable dairy industry.'***

Everything we are trying to achieve is to contribute to a profitable dairy industry.

Yes, the industry faces continued market volatility, drought, rising input costs such as fodder, electricity and water, and subdued farmgate prices.

But despite these issues, the outlook for dairy is positive.

There is growing demand for high-value dairy products from a rising Asian middle class domestically and abroad. Advances in genetics, digital and other technologies can significantly improve farm productivity, supply chain efficiency and traceability and enhance consumer purchasing power across the globe.

What we need is a political environment that recognises and understands the importance of the dairy industry to the national economy.

Dairy is still Australia's third largest agricultural industry, but we are presented with an opportunity to grow the sector's value.

The National Farmers' Federation (NFF) wants to grow agriculture to become a $100 billion by 2030. Dairy must be a part of this ambitious target.

A courageous government will seize this opportunity and work with industry to address these challenges and opportunities.

Your vote counts on May 18. Vote for the person or party you think will give our industry a fair go to achieve its full potential. D

New skilled migrant rules welcomed

Key points

- ✔ Skilled dairy workers to be eligible for permanent residency
- ✔ Brings dairy into line with meat industries
- ✔ Dairy farmers need reliable access to skilled overseas workers

THE federal government has opened a gateway for skilled migrants working on dairy farms to move permanently to Australia in a bid to help solve the industry's labour shortage crisis.

Under changes to the Dairy Industry Labour Agreement (DILA), skilled overseas workers on Temporary Skill Shortage (TSS) visas and the defunct 457-visa can apply for permanent residency.

To be eligible, workers must be on either visa for at least three years and be nominated for an Employer Nomination Scheme (ENS) visa by the same employer.

Peak dairy farmer group Australian Dairy Farmers (ADF) praised the outcome, after the organisation last year wrote to Immigration Minister David Coleman urging him to help the industry secure a permanent skilled workforce.

"This is a terrific outcome and we appreciate the Minister's efforts in listening to the industry and working constructively with us in addressing the shortage of skilled labour that is hurting dairy businesses," ADF president Terry Richardson said.

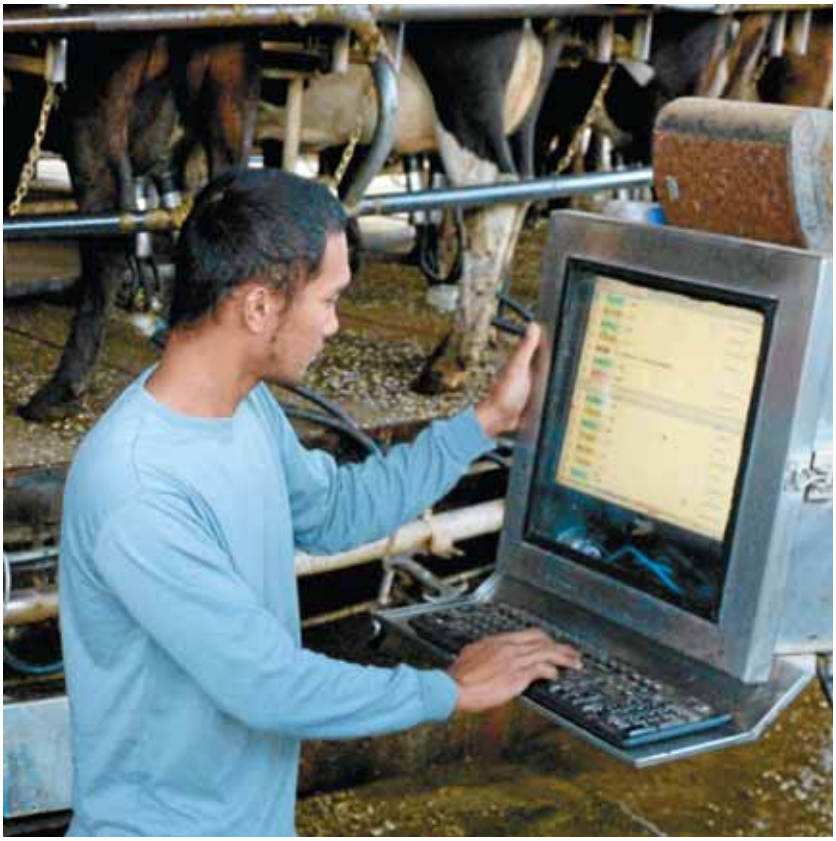
"The pathway to permanent residency is vital to ensuring Australian dairy farmers can attract skilled overseas workers who will avoid Australia if they can obtain permanent residency in other countries."

The change will bring the dairy industry's labour arrangements into alignment with the meat and pork industries.

"Dairy farmers need reliable access to skilled overseas workers and it's pleasing to see the government amend its visa system to reflect the modern reality of the dairy industry," Mr Richardson said.

This latest development comes after the federal government amended its occupation classification list to make it easier for farmers to attract experienced and skilled overseas labour.

Under changes to the Australian Skilled Occupation List, high-level dairy farm managers who have responsibility for overseeing farming operations are eligible for the Temporary Skills Shortage (TSS) visa entry to Australia for up to four years with the possibility of renewal and permanent residency via the 187 visa.



Dairy farmers need reliable access to skilled overseas workers.

'The pathway to permanent residency is vital to ensuring Australian dairy farmers can attract skilled overseas workers ...'

"The experience of regional communities around Australia is that migrant farmers not only fill labour shortages, but they also bring with them new technological insights gained overseas to apply to Australian farming and revitalise local communities," Mr Richardson said.

"The pathway to permanent residency is vital to ensuring Australian dairy farmers can attract skilled overseas workers who will avoid Australia if they can obtain permanent residency in other countries."

The changes will apply to migrant workers on TSS visas who have an undergraduate qualification or at least five years' experience.

The TSS visa for short and medium-term employment last year replaced the 457 visa stream, which had been used to recruit skilled overseas labour.

ADF argued to the government that dairy businesses were losing up to $364 million each year in employee turnover as a result of the industry's labour shortage crisis.

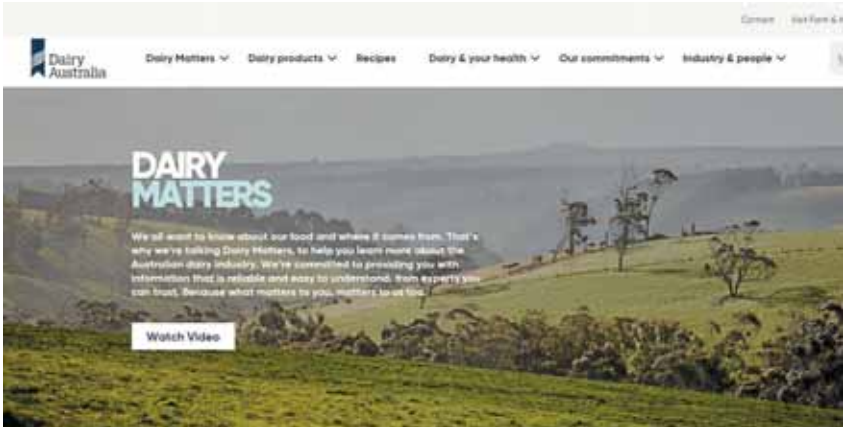
"The dairy industry is taking positive and comprehensive steps to address the widespread skills shortage in the dairy industry, and this is one of a range of measures that will address the problem," Mr Richardson said. D

Time to have a say on the future

By **David Nation**
Managing director
Dairy Australia

Key points

- ✔ Workshops to seek farmers' views of dairy industry's future
- ✔ Vital part of shaping dairy plan
- ✔ New website to influence consumer perceptions



A new website, developed by Dairy Australia, aims to help maintain consumer trust in dairy products.

WE are fast approaching the end of one of the more challenging seasons that have been experienced across Australia, with the impact on milk production expected to be similar to the millennium drought of 2002. Autumn rains that lift pasture production, generate streamflow into reservoirs and allow for a typical winter crop are needed in all states.

I've written in recent columns about feed planning, and this emphasis will continue as it is such a big part of successfully navigating this season and being in a strong position for next season. A dedicated article containing practical advice on feed planning can be found on page 94.

May and June are important months for the Australian Dairy Plan, with more than 20 regional workshops scheduled across the country. This is the starting point of the plan and a critical component for us to get right, because it all revolves around listening and recording your views. It is an opportunity that I hope will be taken up by a large number of farmers and people involved in the dairy industry.

Each session will be run in a way that is independent of any of the peak industry organisations, with independent facilitators bringing together views from all of the local and regional workshops.

The collective voice of farmers and industry will decide on the key priorities and actions required for us to achieve a more profitable and confident industry. We need to be honest and open about the things that are holding us back, while recognising there is great strength to the dairy industry and every reason to believe in a bright future based on strong demand for our products in domestic and overseas markets.

'May and June are important months for the Australian Dairy Plan, with more than 20 regional workshops scheduled across the country.'

I hope all industry participants — farmers, processors and service providers — will use their voice to help identify these priorities to deliver transformative change in the next five years and beyond.

Information about times, dates and locations of Australian Dairy Plan workshops around the country is available via a dedicated website <www.dairyplan.com.au>. If you are unable to attend in person, it is also possible to participate through online discussion.

I'd like to acknowledge the efforts of Regional Development Programs (RDPs) and state dairy farming organisations in making these regional events possible and proactively facilitating the involvement of farmers in the consultation.

I believe maintaining consumer trust in dairy products and the social licence of our industry is of paramount importance for dairy and will no doubt be part of the discussion around the industry's future at the upcoming workshops. The more socially conscious consumer is expecting more of industry and the product we produce.

This is a key reason why Dairy Australia has launched a new consumer marketing approach to proactively influence consumer perceptions around the industry — Dairy Matters. The approach demonstrates the industry's willingness to be transparent about our product and farming practices, and proactively address questions around the industry in relation to issues such as health, animal care and the environment. The campaign is underpinned by a new website at <www.dairymatters.com.au>, that enables the public to ask questions and find out more about dairy.

The campaign will be promoted through adverts on TV, cinema, websites and social media. You can also pick up a Dairy Matters communication resource kit from your local RDP. D

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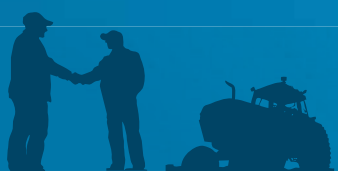

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Dairy key role in antibiotic fight

Key points

- ✔ Antimicrobial resistance major emerging issue for human and animal health
- ✔ Increasing pressure on animal industries to use antibiotics responsibly
- ✔ Farmers can reduce costs and improve herd health with different approach

By **Carlene Dowie**

THE dairy industry must play a key role in helping prevent antibiotic resistance, the Australian Dairy Conference in February was told. Individual farmers who work to reduce antibiotic use on farm will reap rewards through reduced costs and improved herd health.

Dairy Australia animal health and fertility program manager Dr Jo Coombe said antibiotic resistance was not just an issue for the livestock industry but an issue for the whole community.

"We are guardians of a precious resource," she said.

The World Health Organisation looked at it as 'one health' — how the animal sector and human health sector interacted.

The problem was that any overuse of antibiotics in livestock industries could create monster drug-resistant microbes that threatened human health.

Large companies were also looking closely at this issue. For example, McDonalds was planning to audit the 10 largest beef producers on how they were using antibiotics.

Dr Coombe said although there was not a lot of specific data, Australia had a good story to tell, with less antibiotic use in its livestock industries than many other countries.

Australia's dairy industry also had a good story to tell about how it managed animal health with a long history of programs that among other things encouraged prudent use of antimicrobials, such as antibiotics.

The problem of antibiotic resistance did not mean that farmers would be banned from using antibiotics.

"But we do need to continue to improve how we look after antibiotics, and how we often use them and how well we use them," Dr Coombe said.

Part of that included looking at the drugs being used.

Antibiotic resistance is a major world health issue.

Some drugs posed less risk of creating resistance. The biggest risks were around drugs that were critical for human health.

Dr Coombe urged those at the conference to start the conversation with other farmers about why antibiotic resistance was an important issue.

'The Australian dairy commits to using antibiotics responsibly as little as possible as much is necessary to protect the health and welfare of our animals.'

The Australian dairy industry had developed a policy around the use of antimicrobials:

"The Australian dairy commits to using antibiotics responsibly — as little as possible as much is necessary to protect the health and welfare of our animals.

"All dairy farmers will access antibiotics from a registered vet and they will use them responsibly under veterinary direction.

"Antibiotics that are of high importance to human health in Australia will only be used to treat dairy livestock in exceptional circumstances when no other alternatives exist."

This policy was included in the industry's sustainability framework, Dr Coombe said.

New Zealand experience

Dr John Penry, who is now Dairy Australia's manager of technical and innovation, told the conference the New Zealand dairy industry was working hard to reduce its use of antibiotics.

Dr Penry until March was working with Cognosco, the research arm of Anexa, a veterinary practice owned by 900 farmers.

He said he first became aware of the importance of the antibiotic resistance issue at a conference in Melbourne in 2013 when a Dutch vet outlined that country's laws to cut antibiotic use in animals by 70 per cent.

The message was loud and clear: the use of antimicrobials in food production was a privilege, not a right.

Dr Penry said NZ had stringent requirements around vets supplying drugs to farms.

These required the vet to have two scripting consultations on the farm each year, looking at the animals on the farm and identifying the sort of issues that might arise and the antibiotics that might be used to deal with them.

Fonterra's and other milk processors' quality assurance schemes audited each farm's antibiotic use against the script. If it did not match, the farm failed the QA scheme and the vet was sanctioned.

NZ research revealed that the country's use of antimicrobials was lower than many other countries and that about 85pc of antimicrobials used on farm were for the treatment of mastitis. ▶

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Dr Penry said research had identified a number of ways in which farms could reduce the use of antibiotics.

Anexa employed technicians who implemented Teatseal programs in heifers. It had used this procedure on 21,700 heifers in the past 12 months and had cut clinical mastitis rates in those animals by 68pc.

Research had also found the number of animals requiring dry cow therapy was not as high as many had assumed.

Quarter samples of 100 random cows in 36 random herds had found on average only 8pc had major pathogens, indicating dry cow therapy was needed.

The NZ Veterinary Association dairy cattle branch had committed to using only selective — and not blanket — dry cow therapy from 2020.

Other research had revealed that only one herd test was needed up to 90 days before dry off to accurately identify a cow with a high individual somatic cell count, which would then require dry cow therapy.

Dr Penry said another new test being used in NZ was a dairy antibiogram.

This bulk tank milk sample test detected and monitored antibiotic resistance in mastitis bacteria *Staphylococcus aureus* and *Streptococcus uberis* on a farm.

A farm did this test once or twice a year to get a sense if a particular drug was going to work on the farm or how close they were to it not being effective.

There was evidence from 1500 bulk tests in the past 18 months of increasing resistance to some of the antimicrobials with which the NZ industry did not think it had a problem.

The dairy antibiogram test had recently become available in Australia.

Dr Jo Coombe says antibiotic resistance is a huge issue worldwide.

Dr John Penry says there are new approaches to managing mastitis that can reduce the amount of antibiotics used.

Australian on-farm experience

Stony Creek, Vic, dairy farmer Peter Hanrahan and his vet Dr Peter DeGaris have implemented protocols on his farm to reduce antibiotic use.

Dr DeGaris said antimicrobial resistance stewardship was a shared responsibility between governments, vets and farmers.

A key part of the approach required reducing the use of antibiotics to treat mastitis, as this was where the vast majority of antibiotics were used.

Mr Hanrahan, who milks about 900 cows, said he was prompted to look at the management of mastitis cases on his farm when his accountant pointed out that his vet costs were high.

Dr DeGaris said they wanted to put systems in place around prevention that were robust and simple enough for the predominantly backpacker workforce to follow.

The first focus was prevention.

A heifer Teatseal program was introduced and cut mastitis rates in that group of animals from 25-27pc to zero.

Mr Hanrahan said when this was first suggested as a way forward, he had laughed as it was difficult to imagine working with heifers six weeks to two months before calving, as they were difficult enough to manage just after they had calved.

The farm had employed the vets and their technicians to do the program as it was more cost-effective than trying to train staff to do it.

They either used a Teatseal trailer at the stockyards or trained the heifers onto the rotary dairy and then put them back onto it to do the treatment.

About 30 could be done in an hour — so they left a day to do it, marking it on the calendar as part of their annual routine.

The Hanrahan farm had also introduced a new simple protocol for identifying and managing clinical mastitis cases. The protocol was outlined on posters on the wall of the dairy so it was clear to staff.

It also introduced on-farm testing of milk samples. This Mastaplex system, which cost about $1000, was simple to use. Up to four samples per day could be tested. These were taken on farm and put into the system's box and results were emailed within 24 hours.

Under the protocol, mastitis was divided into three categories — and each required different actions.

The first was sick milk. This was a mild clinical mastitis case — a cow with changes in the milk that persisted past the first three strips. This cow was drafted using the autodraft function in the dairy and a milk sample was taken and tested through the Mastaplex system. A treatment deci-

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◀ sion was made based on the results of the test.

"Essentially at this stage, we are doing nothing," Dr DeGaris said. "This is different from the message for the past 30 years, which was if you saw a cow with mastitis you treated her straight away. So we are waiting until we get information before we start to treat those cows."

The second was sick udder. This was a cow with changes in the milk and a hot spot on the udder.

This cow's milk was also sampled, it was treated with an anti-inflammatory and it was assessed again in 12 hours.

Again, unless the cow's health deteriorated, they waited for the milk sample result before treating.

The third was sick cow. This was a cow with changes in the milk, had a hot and swollen udder and was clearly sick (high temperature, off feed, sunken eyes).

This cow's milk was also sampled and it was treated with an anti-inflammatory and a broad-based antibiotic.

Depending on the results of the test, the drug given might then need to be changed or an assessment made about the chances of the cow recovering from the mastitis.

Dr DeGaris said the protocol was really simple, which made it easy for staff to identify the type of mastitis the cow had and the protocol for dealing with it.

"One of the key features of it is waiting until we get more information before we start treating the cow with antibiotics," he said

Dr DeGaris said the on-farm culturing and testing was a critical part of the new protocols.

Although the on-farm system did not provide the same results as taking a sample and sending it to a commercial lab, the results were available faster and identified the bacteria into groups that were relevant to how the cow should be treated.

Dr Peter DeGaris says the new approach to mastitis is to not always treat a cow at the first sign of disease.

The Mastaplex system used on the Hanrahan farm allows fast testing of milk samples for mastitis.

The test results provided and subsequent treatments recommended were:

- Gram negative: tended to be *Escherichia coli*, which did not respond to antibiotics. So cows were treated with an anti-inflammatory, oxytocin and fluids.
- *Strep. uberis*/gram positive. Dr DeGaris said this was the most common bacteria dealt with on farm, and a lot of cases improved without treatment. The cow was observed and if improving was left to self cure, but if not, was treated with antibiotics.
- *Staph. aureus*/CNS. Cows were given antibiotics and if did not improve, further decisions were made based on age, history, cell count, conformation and chronicity.
- No growth. Cow monitored.

Peter Hanrahan introduced a new approach to mastitis management on farm that has cut rates of the disease and reduced his herd health costs.

The test also showed antibiotic sensitivity, allowing a decision to be made about which antibiotic to use.

The new approach has seen a big reduction in the number of clinical mastitis cases on farm.

In 2016, 279 clinical cases of mastitis on the farm were treated with antibiotics. In 2018, 73 cases were treated — a 75 per cent reduction.

Dr DeGaris said the delay in treatment by 24 hours, while awaiting the test results, had no impact on mastitis levels on the farm, subsequent cure rates or other animal health problems.

The cost of antibiotics had reduced 57pc, not as much as the number of cases, because there had been a switch to some more expensive antibiotics because testing had revealed some bacteria were sensitive to some of the drugs that had been used on the farm previously.

The costs did not include the cost of the Mastaplex system or the increased use of anti-inflammatories.

Mr Hanrahan said it was important for farmers to be aware of the antibiotic resistance issue and not just use antibiotics for the sake of it.

Dr DeGaris said there was increasing awareness of the importance of the issue among Australian farmers, but they were not as far down the path as New Zealand farmers. D

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Diet wars: can dairy win the fight?

Key points

- ✔ Dairy industry facing pressure on several fronts
- ✔ Some of buzz around alternatives is marketing hype
- ✔ Look to promote dairy as a superfood

By **Carlene Dowie**

DAIRY is fighting a war on several fronts to remain a key part of people's diets, the Australian Dairy Conference in February was told. But the industry has a good story to tell consumers and should take the opportunity to promote milk as a superfood.

And some of the buzz around non-dairy alternatives is little more than marketing hype that does not reflect what's happening in the marketplace.

International Dairy Federation president Dr Judith Bryans, who is also chief executive of DairyUK, told the conference several United Nations and government policies, although not targeting dairy directly, had an impact.

The UN had voted recently to reduce the harm of fats, sugar and salt in the diet, as it tried to combat the negative health impacts of poor diets.

Dairy was classed as a high-fat food — and although the industry had successfully had the UN motion amended to specify "excessive" consumption of fats, the policy had already resulted in Canada excluding dairy from its latest dietary guidelines.

The industry needed to lobby to show the nutritional value of dairy.

Plant-based alternatives

Dr Bryans said dairy was also under attack from plant-based alternatives.

Dr Judith Bryans: there are a lot of plant-based products that call themselves an alternative to dairy, even though nutritionally they are not equivalent.

"If you go into a supermarket in the UK, there are a lot of plant-based products that call themselves an alternative to dairy, even though nutritionally they are not equivalent," she said.

"They are not equivalent in taste or texture. But they trade on dairy names and dairy values."

Dr Bryans said this was confusing consumers, particularly millennials, who, according to one piece of research done in the UK, associated the word dairy with these alternative products, rather than real dairy products.

But Dairy Australia's human health and nutrition policy manager Melissa Cameron told the conference some of the perceptions around non-dairy alternatives were myths. People perceived alternatives as a hot market segment that were outstripping the growth of dairy milk and that consumers were ditching dairy for non-dairy alternatives.

But this was not the case.

There were 201 alternatives to dairy on the market-and all were vying for consumer attention.

But total white milk (fresh and UHT) consumption in Australia continued to grow, as did consumption of non-dairy alternatives.

Dairy milk made up 93 per cent of supermarket sales of milk and alternative products. The market share of alternatives had grown by just 2pc since 2007, up from 5pc to 7pc. ▶

◀ Ms Cameron said rather than ditching dairy for alternatives, many consumers were buying both.

The truth was that only 5pc of consumers bought only alternatives, with 31pc buying both, 62pc buying dairy only and 2pc buying neither.

Buyers of non-dairy alternative were more likely to be city-based, female, and aged 18-34 with children at home.

Nutritionist Dr Anneline Padayachee told the conference changing demographics in Australia would influence the markets for dairy and non-dairy alternatives.

Most of the population would soon be millennials or younger, while an increasing proportion was either first or second generation migrants, many of whom were lactose intolerant.

Alternatives were considered "functional thirst quenchers", which was the fastest growing new product category, Dr Padayachee said.

A functional thirst quencher was a liquid that was drinkable and had functional benefits, such as lowering cholesterol, boosting energy levels, slowing ageing or being lactose or gluten-free.

Plant-sourced drinks were seen as having health-promoting components such as dietary fibre, minerals, vitamins and antioxidants.

Dr Padayachee said alternatives were perceived to appeal to specific users, such as fitness fanatics, the "in kids", vegans and vegetarians.

Ms Cameron said although people perceived animal welfare and sustainability were the drivers for people to switch from dairy, Dairy Australia research revealed this applied to only a small group.

The key drivers were alternatives were seen to be healthier, people liked the taste or had a dairy intolerance.

Holding position

Dr Bryans said dairy needed to battle to hold its position.

Part of the solution lay in accurate labelling — the industry needed to challenge dairy names and images being used in plant-based products.

Although plant-based dairy-alternative products could not be sold within the European Union and Britain under names including milk, butter and cheese, the industry had to keep fighting to have those regulations enforced.

'Some of the buzz around non-dairy alternatives is little more than marketing hype.'

The industry also needed to address the belief that dairy and livestock did not have a place in the world.

But there was no point in arguing with vegans.

"We have almost a religion and an ideology around plant-based," she said. "I would never say go and fight with vegans, there's no point.

"They're vegans, they've chosen their ideology for their reasons, but what we need to do is to get to the people who still want to have dairy, who still love dairy but who are feeling guilty about it because of all the things they see.

"We have to remember it is a social world."

The dairy industry also needed to change the way it talked to consumers to connect more with them and to be useful to them.

Ms Cameron said consumers perceived non-dairy alternatives "to be a premium value-added product with health and nutritional credentials".

"There's this perception that the plant-based beverages are healthy and more natural than dairy," she said.

"But when you look at the ingredients list on plain cow's milk — it comes out on top with one single, natural ingredient.

"Most commercially available alternatives contain a really long list of ingredients.

"And this is a real paradox because consumers often cite naturalness as an important criteria to them when choosing their foods.

"Milk contains eight essential nutrients, however, with a single ingredient are consumers able to recognise the nutritional value on offer compared with the long list of ingredients and added nutrients you see on alternatives?"

Ms Cameron said the cheap price of plain white milk might also be contributing to consumers being unaware of the "nutritional powerhouse on offer in milk".

Dr Padayachee agreed. Milk was seen as a cheap, everyday food.

"But the nutritional benefits (of dairy) are off the scale — that's what you guys have," she said.

"And that's what you have the ability to change consumer perception and take your product from just being $1 a litre to being a hell of a lot more valuable.

"You are a Porsche so stop positioning yourself as a Toyota."

Dr Padayachee said recent research showed dairy could play a key role in preventing muscle wasting in older people.

"We need to change the perception of just being a commodity to being an apple a day keeps the doctor away," she said.

"It's not just an apple a day that keeps the doctor away — a glass of milk a day can keep me from going into an old age home for a long period of time."

Ms Cameron said there was a lesson for the industry in the butter/margarine fight.

Butter consumption fell dramatically from the 1950s as margarine was promoted as a healthier product, but began rising in 2005 and now surpassed margarine.

This was done through work on repositioning dairy fat and the message, based on sound research, that the link between dairy and heart disease was a myth.

Dr Anneline Padayachee: You are a Porsche so stop positioning yourself as a Toyota.

Melissa Cameron: There's this perception that the plant-based beverages are healthy and more natural than dairy.

Melissa Clark Reynolds: We are in the food business and we are in the love business.

Milk could be promoted as natural, for it provenance (for example, grassfed milk) and having less or no sugar.

Consumer point of view

Beef and Lamb NZ independent director Melissa Clark Reynolds said producers needed to think about their product from the consumer's point of view.

It was vital to move away from being a commodity. "We fight against commodification not by telling our consumers they are wrong but by finding the things that really drive their need and then meeting those needs," she said.

"And not pricing on what it costs us to produce it, but pricing it on what value it has to those consumers.

"The more value we add to a product, the more people are prepared to pay."

Ms Clark Reynolds talked about examples of this in the NZ beef industry.

Beef pericardium, previously a waste product that was sold for pet food, now sold for $2500 a kilogram to be used to create a medical product to help repair human hearts.

Collagen (gelatine) was sold as a premium beauty product.

The NZ beef industry had found grassfed was really valuable to consumers.

"If you have attributes that consumers want, you can price it that way," she said.

The dairy industry shouldn't be afraid to tell consumers about the attributes that they might not know about, such as milk being gluten-free and antibiotic-free.

"We are in the food business and we are in the love business," Ms Clark Reynolds said. "And I think sometimes we forget that.

"We forget that it is about the food. It is about me as a consumer buying food because I love my family.

"Let's remind people this food is produced with love and it's bought by people who give it to the people they love."

Farmers look to new ways to sell milk

Key points

- ✔ Farmers forming new alliances to sell milk to processors
- ✔ DFVC aims to build business on guaranteed high quality milk
- ✔ McColl's looks to deliver milk to place of highest value
- ✔ DFMC provides farmer representation in processor negotiations

By **Marian Macdonald**

FARMERS are forming new alliances following the dairy crisis. And while some commentators have declared the era of dairy co-operatives all but over, co-operation itself is alive and well, with the emergence of collective bargaining groups, clubs and even farmer-owned companies.

Australian Dairyfarmer magazine chatted with three farmer groups to learn more.

The farmer company

The Dairy Farmers of Victoria Consortium (DFVC) has ambitions every bit as grand as its name. "We want to ensure the sustainability of the dairy industry," DFVC co-founder Daniel Hoch said.

The 30-year-old farm adviser teamed up with northern Victorian dairy farmer Dean Kendrick in early 2018 determined to bring change.

"We asked ourselves 'how can we get more for our milk, not 'can we'?" Mr Hoch said. "The answer was to provide milk that processors really want."

Accordingly, DFVC manages its own quality control, guaranteeing somatic cell counts will stay under 200,000 and has fitted sensors to vats that continuously record compliance with temperature standards.

Because "processors are in the business of processing" according to Mr Hoch, the consortium will soon manage its own transport, too.

DFVC also plans to market animal welfare and environmental credentials.

"We're working with the RSPCA to build an auditing process," Mr Hoch said. "We want to have a stamp like the one used on cage-free eggs to show the consumer that farmers love their animals."

Mr Hoch said he hoped RSPCA accreditation would benefit the entire industry. "We want to bring the industry up with us," he said. "Our marketing will showcase our farmers because we can't speak for others but we won't be denigrating other farmers."

Simon Thornton has an ambitious plan to change the way milk is sold in Australia to get more value for both farmers and processors.

'If we could just get transparency and allocate the milk to its highest value use every day of the year in an efficient way, then farmers and processors would make more money.'

The group's membership is growing rapidly. In its first season, DFVC supplied 45 million litres from 24 farms within a 100-kilometre radius of Echuca, Vic, and expects to double that in the current season.

Expansion plans include supply from the Kiewa Valley and Gippsland. The consortium aims to meet its ultimate goal of managing 200 million litres from 100 farms within three years. But it won't be expansion for expansion's sake.

"We will only do what we can manage," Mr Hoch said.

"We don't want everyone; we want farmers with the attitude of wanting to develop progressive farming businesses who are passionate.

"The consortium will work in perpetuity while people are being selfless and concerned about others."

The collaboration club

Recognising that farmers keen to collaborate are often stymied by overwhelming logistics, Friesian is offering a streamlined farmer to processor service.

Fronted by Simon Thornton, a handful of high-flying investors comprising the "Friesian Club" bought McColl's Transport about a year ago with the long-term goal to "build something great".

"Friesian's plan is to go deep in dairy" Mr Thornton said. "We think

that it's a good long-term industry that needs to succeed in Australia and we want to be part of driving that success."

One of the investments has been in supporting farmer clubs.

"A series of groups of farmers have come to McColl's or Friesian saying, 'Look, you obviously see a future in this industry, how can you help us to succeed? We don't want to be individual farms dealing with individual processors.'

"We're working with groups of farmers who live in proximity, who believe in the same farming approaches and want to work together."

McColl's handles payments to farmers, quality testing, transport and even negotiations with processors.

"We have the systems that will set farmers free from having individual relationships with processors," Mr Thornton said.

"We specifically think of them as clubs not co-ops because I think it's important for groups to exclude people they don't want. You're in charge of who is in your club.

"The tone of a co-op is 'Give us a call and we'll start picking you up on Monday'. It's the lowest common denominator."

Friesian is only seeking to recover costs with its support of farmer clubs. It makes money by having McColl's collect the milk from farms.

"McColl's collects the milk on a modelled cost basis, we're very transparent," Mr Thornton said.

"We're not charging any more than the normal cost of running the trucks.

DFMC executive officer Mark Kebbell says it acts unashamedly and determinedly for farmers.

"As McColl's we are looking for stable work in an area that has a long-term dairy future.

"We want to help these farmers to find some way of working together other than they had in the past with the all-encompassing co-operatives."

To give farmers greater supply choices, Friesian is investing in staging points in western and northern Victoria. "Friesian's goal is to transform the value of milk in some way," Mr Thornton said.

"Where we have milk that is geographically cut off from the processors who have the most value for it, we are looking for ways to invest in infrastructure to change the economics of logistics and therefore the milk.

"With staging stations, we can collect that milk from farms, chill it and put it into larger line-haul tankers, so we can take it further.

"Farmers in that club get a greater choice of where their milk can go, rather than effectively being trapped by the local monopoly."

Mr Thornton said he believed the dairy industry could become more efficient and profitable.

"I think Australia should have a competitive advantage on a world scale in dairy," he said. "We have a very inefficient industry and enormous inefficiencies just on the transport side.

"We'd rather have some low-cost thin-layer technology that allows us to pick up the milk and deliver it to the most efficient place rather than delivering it miles away.

"If we could just get transparency and allocate the milk to its highest value use every day of the year in an efficient way, then farmers and processors would make more money.

"There are days when the processors are effectively being force-fed milk that they don't have any good use for and they sell it onto the secondary market or swap it away and it becomes part of their balancing cost.

"Balancing costs can be huge. Balancing from the industry curve to flat, this year, on the Victorian market, with a pretty benign outlook, costs two cents per litre and rises exponentially with more seasonal production. When you get to three-to-one, it becomes six cents per litre.

"We've all got to work out how to reshape the industry so that it will prosper." ▶

The modern co-op

Dairy Farmers Milk Co-op (DFMC) negotiates supply contracts on behalf of 220 farms in Queensland, New South Wales, Victoria and South Australia.

DFMC executive officer Mark Kebbell said that success was underpinned by a powerful agreement founded on the need to make its co-dependency with processors work for all involved.

"One of the things that makes our milk supply agreement work, unlike many collective bargaining groups, is that Lion is obliged to talk to us," Mr Kebbell said.

"If we're in dispute, both of us are bound by the determinations of an independent expert as opposed to mediation, which can 'chop the baby in half' and means nobody's happy.

"What that means is in fact a very mature negotiation. If we know that someone else will potentially decide the right answer, we might as well submit something that's justifiable.

"It can be expensive. We're fortunate to be well resourced, which means we can go to dispute resolution and successfully stand up for our position."

Mr Kebbell believes DFMC is not destined to fail in the same way as other farmer co-operatives before it.

"We're not vertically integrated," Mr Kebbell said.

"Is a farmer board the right entity to run big operations around the country, big relationships with supermarkets managing brands or international relationships?

"You need to be big, you need to be a Friesland Campina or a Fonterra and have decades of experience and resources on the ground to do that well.

"We don't have quite the same risks in that we're a representative group."

Mr Kebbell said the co-operative's relationship with processors was inherently adversarial, despite the need to form a partnership.

"While we have to come to agreement because we are codependent, we start from different positions, there's a mutual respect for each other's perspective," he said.

"Every year, we negotiate milk policy, which covers the layers inside the pricing mechanism — component ratios, quality policies and location — as well as the price.

"We act unashamedly and determinedly for farmers. That said, our agreement and the dispute resolution procedure mean that we work with facts rather than emotion because that's what the independent expert will use.

"To negotiate with any strength, we need to replicate exactly other processors' payment structures in all our regions.

"Then we apply our farmer volume, quality and location data to that payment model and see what it would pay.

"The announced price can be a complete irrelevance."

And while farmers can deal directly with Lion Dairy & Drinks rather than be represented by the cooperative, Mark Kebbell said DFMC's value was clear.

"There are farmers who feel that they don't want or need representation and that's okay," he said.

"Sometimes those farmers congratulate us for the outcomes we achieve for them, even though they're not members, and it's hard to know what to say in return.

"Ultimately, DFMC farmers know we have a seat at the table and that if they want us advocate on their behalf, we will.

"With so little trust throughout the industry, that means a lot." D

Dairy health benefits reaffirmed

Key points

- ✔ Govt reviewing Health Star Rating labelling system
- ✔ Dairy industry promotes health benefits of its products as part of review
- ✔ Dairy products already under-consumed by Australians

THE Australian dairy industry is actively reinforcing the health benefits of dairy products such as cheese, as the Australian Government reviews the Health Star Rating front-of-pack labelling system.

As part of the five-year review, the dairy industry has taken a proactive approach to ensuring the Health Star Rating system recognises the nutrients and healthiness dairy foods such as milk, cheese and yoghurt can provide.

The Health Star Rating system is designed to rate the healthiness of packaged foods.

The system assigns a star rating from half a star to five stars for consumers to compare packaged foods within the same category, such as yoghurt or cereal — with five stars being best.

Dairy Australia and the broader industry have contributed to each consultation period of the review, reinforcing the message that dairy foods are an important part of a healthy diet, every day.

Already, recognition has been received that all milk, cheese and yoghurt are Five Food Group foods as part of the Australian Dietary Guidelines.

Australian Dairy Products Federation acting executive director Janine Waller said the dairy industry had been lobbying for all Five Food Group dairy foods to score a minimum of three health stars.

"Dairy foods are already under-consumed by Australians and more than half don't achieve the recommended amount of calcium needed each day," Ms Waller said.

"Dairy foods provide the ideal nutrient package, and it's important the Health Star Rating system recognises this."

In a significant improvement, most plain Greek yoghurts now score at least three health stars following the dairy industry's previous submissions.

Nutrition scientist Dr Rivkeh Haryono said Dairy Australia would continue to work with government and stakeholders to ensure the health benefits of all other Five Food Group dairy foods were recognised through formal rating systems.

"While we're supportive of the Health Star Rating system, we still have some concerns about the current ratings of certain dairy foods," Dr Haryono said.

"We are particularly concerned by low scoring 'everyday' cheeses like cheddar, and we are actively seeking a solution so these products score at least three stars."

Since the last round of the review, tweaks to the system have shifted some products up by between half a star and one star. However, 47 per cent of cheese products still score less than three stars.

"Science actually shows consumption of cheese is associated with reduced risk of high blood pressure and reduced risk of stroke — so we should be encouraging consumption of cheese," Dr Haryono said.

> ***'...we still have some concerns about the ratings of some foods...'***

"Dairy Australia is concerned that if cheeses like cheddar continue to score poorly, this may further discourage intake of the dairy food group as it could be seen as an unhealthy food by consumers."

Recommendations from the Health Star Rating review are due to the Australian Government in May. D

Dairy farmers and consumers can find more information about dairy's role in a healthy diet at <www.dairy.com.au/health>.

Dairy Australia dispels food war myths

Key points

- ✔ Dairy alternative market growing slowly
- ✔ Consumer perceptions of alternatives not linked to reality
- ✔ Need to provide consumers with holistic view

DAIRY Australia is continuing to dispel the myths of non-dairy alternatives as the Australian Government investigates misleading labelling and marketing issues surrounding plant-based products.

Plant-based products are increasingly being marketed as dairy alternatives, ranging from soy to nuts, coconut, rice and pea, and now extending beyond 'milk' and into 'yoghurt', 'ice cream' and 'cheese'.

However, the latest data shows the market share of non-dairy alternatives has only grown from 5 to 7 per cent in more than a decade.

Only 5pc of consumers purchased alternatives exclusively, while cross-purchasing is on the rise.

Some 31 per cent of consumers reported they bought both milk and alternatives in a given week, while two-thirds purchased dairy exclusively with no alternatives in the mix.

Dairy Australia has reaffirmed that despite the way these products are labelled, they do not have the same nutritional benefits of dairy milk. "Alternatives are marketed and labelled, with product names using dairy terms and evoking dairy values," Dairy Australia nutrition policy manager Melissa Cameron said.

Dairy Australia's Melissa Cameron dispels food war myths at the Australian Dairy Conference in February

"But from a nutritional perspective, these non-dairy alternatives often bear little resemblance to the original dairy product.

"The fact is that milk has 93pc market share, and growth was on a par with non-dairy alternatives, but the reasons consumers purchasing non-dairy alternatives are alarming."

A Dairy Australia survey showed more than half of respondents buying non-dairy alternative beverages did so because they perceived them to be healthier than dairy milk.

In a recent French study, consumers similarly agreed that plant-based drinks provided the same nutrients as milk. Some 60pc of respondents thought that plant-based drinks could replace cow's milk in terms of nutrition.

However, this perception of non-dairy alternatives is not linked to reality.

"Images and ads are presented and products placed on shelf so that consumers believe these products to be nutritionally or otherwise equivalent to dairy," Ms Cameron said.

"Nearly three-quarters of alternatives drinkers believe you can easily get your vitamins and minerals from other sources — but this is not the case."

The Australian dairy industry believes a holistic review of the topic is required, including consumer perceptions.

"We want to ensure that decision-makers are getting the right information and can make informed choices on so-called dairy alternatives," Ms Cameron said. D

Dairy farmers and consumers can find more information about dairy's role in a healthy diet at <www.dairy.com.au/health>.

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Giving teachers dairy discovery tools

Discover Dairy has been educating students about the importance of the Australian dairy industry since 2007.

Key points

- ✔ Dairy Australia launches new primary school curriculum resources
- ✔ Discover Dairy is an online hub developed in consultation with teachers
- ✔ The curriculum-linked resource provides fun and engaging ways for children to discover more about dairy

DAIRY Australia's online primary school education program, Discover Dairy, has a fresh look and is packed with new and updated curriculum-linked resources to help teachers deliver the Food and Fibre, as well as Health and Nutrition units, of the national school curriculum.

Developed in consultation with teachers, the online hub offers a range of resources including units of inquiry, activity ideas, videos, worksheets and interactives, designed to bring the dairy industry to life in the classroom.

Dairy Australia's schools communications manager, Emma Rundle, said the new Discover Dairy resource hub was an easy tool for teachers to get students excited about key parts of the curriculum.

"The Australian National Curriculum guidelines are always evolving, and so too is our Discover Dairy primary school education program," she said.

"Teaching students about agriculture, food and fibre and health and nutrition are core components of the curriculum so it's important we help equip teachers to deliver these streams in the modern classroom.

"Alarmingly, children are increasingly disconnected from agriculture and lack an understanding of where their food comes from and the important role that our farmers have in providing nutritious, high-quality food in Australia and abroad.

"In addition, primary-school-aged children are missing out on a number of nutrients needed for healthy growth and development.

"As one of the five food groups in the Australian Dietary guidelines, dairy is an important part of children's diets, but nine out of 10 Aussie kids are not getting enough dairy each day, according to the Australian Bureau of Statistics' Australian Health Survey."

The Discover Dairy resources highlight the farm-to-plate process, and how the consumption of dairy foods, as part of a balanced diet, can build and maintain strong, healthy bones during childhood and throughout life.

The resources have the flexibility to be adapted to suit teachers' needs and are easily downloaded from the online hub for immediate use.

Kimberlin Education, a specialist education consultancy, supported the development of the resources.

Kimberlin Education's company and education director, Naomi Lindermeyer, said Discover Dairy's resource hub allowed teachers to effortlessly search for and save lesson plans that would best suit the year-level of their class, as well as the particular subject they were teaching.

"While putting together the one-stop-shop resource hub, our research revealed 87 per cent of teachers said they would like to teach an inquiry led unit to their students based on farm-to-plate concepts," Ms Lindermeyer said.

"Teachers can select different types of teaching resources such as PDFs, animations and video, depending on how it best fits with the lesson they are planning."

Discover Dairy has been educating students about the importance of the Australian dairy industry since 2007.

Teachers are being encouraged to join the thousands of classrooms who have already discovered dairy and visit the online hub at <www.dairy.edu.au>.

'Alarmingly, children are increasingly disconnected from agriculture and lack an understanding of where their food comes from...'

South African farm invests despite risk

Key points
- ✔ South African farm modernised with new dairy and software
- ✔ Cows split into feed groups
- ✔ Farm employs 60 staff

By **Chris McCullough**

MODERNISING any dairy farm comes with an expected element of risk but when that farm is in South Africa with its current political uncertainties, then the risk is much higher.

However, for one farm milking 700 cows near Johannesburg, it's business as usual with a modernisation program well underway.

Corne Nel and his family run Doornfontein Melkery at Randfontein, just 40 kilometres west of Johannesburg, where the summer temperatures can reach 40 degrees Celsius.

As well as the milking section of the herd, the farm is home to another 1280 followers and a commercial beef herd of 400 Bonsmara cows that produce meat for the local markets.

To set the scene, the home dairy farm extends to 300 hectares but there are an additional six farms in the business adding another 2100ha to cater for growing crops and managing the other livestock.

'The biggest challenge affecting dairy farmers in South Africa is decreasing milk prices ...'

Lactating cows on the home dairy unit are kept in open air corals and split into groups to make it easier to manage them at feeding and milking times.

This farm has already modernised by installing a DeLaval 64-point rotary milking parlour just two years ago, which speeded milking times up considerably, but there are also plans to build new housing.

Dairy unit manager Pieter Barnard explained how herd performance had increased steadily thanks to new equipment and software.

"We have 700 cows milking, which are mainly Holstein with some Ayrshires in the mix," Mr Barnard said. "Our average yield is 31.5 litres per cow per day at 3.6 per cent butterfat and 3.1pc protein.

"Cows are split into different performance groups and fed accordingly with a mix containing lucerne, various grasses, maize silage, brewers grain, sorghum, molasses and a concentrate. Everything is grown by us except the lucerne.

"We feed around 56kg per day to each cow with a dry matter intake of 25 to 28kg. Our milk goes to Bosparadys farm, which bottles their own milk plus that from a number of different suppliers like us.

"Farmers in this area receive an average of Rand 4.86 ($A0.49) per litre but the shops charge Rand 11 ($A1.10) per litre."

The farm employs 60 staff to cover the dairy and beef herds as well as feeding and working the crops in the fields. Eight staff are on duty each milking three times per day at 4am, noon and 7pm.

A good calf-management program is also a vital tool on this farm to ensure healthy, well-developed heifers enter the main herd at two years of age.

"Once born the calves receive up to four litres of colostrum within the first two hours," Mr Barnard said. "They are moved to the first stage calf housing into individual pens where staff closely monitor them. After two weeks they are moved into calf hutches for another two weeks and are weaned at 64 days old.

"We keep the heifers for the main herd and the bull calves go into our feedlots for fattening as bull beef. With the intense heat the calves are kept under shade during the summer times in open pens to protect them."

According to Mr Barnard, the biggest challenge affecting dairy farmers in South Africa is decreasing milk prices, which reached Rand 5.50 ($A0.55) just a year ago.

In order to increase margins per litre, the Nel farm is investing in new equipment, technology and ideas to increase milk quality and reduce costs.

As well as the new efficient rotary parlour and a new hygiene program along with it, milk quality has started to improve already.

"Our somatic cell count was in the region of 600,000," Mr Barnard said.

A new arrival in the maternity coral.

Calves enjoy the shade in their second stage housing.

A one-week-old calf being moved to its new calf hutch.

Cows take shelter under the shade cloth to escape the intensity of the sun.

Dairy manager Pieter Barnard.

Cows escape the sun under the shade cloth.

Cows are fed a total mixed ration fresh every day.

Cows as far as the eye can see.

"Thanks to the new parlour and a strict hygiene program of wiping the teats before milking and dipping afterwards we were able to bring the SCC down to its current level of 80,000 in a period of five to six months.

"Heat stress for the cows is another major issue as they spend all their time in the open corals. We do have shade cloths erected in all the corals and you can see the cows lying in a row under the projected shade during the day.

"Another issue in the corals is mud stress because when it rains the ground gets very wet and muddy for them to walk in.

"There are already large fans and water misters in the collecting area prior to milking to reduce heat stress. However, we have plans in place to build housing in the corals to better protect the cows and make them more comfortable. These houses will be of a narrow construction and built in the direction of the winds to help cool them down."

Another tool recently introduced to the farm that Mr Barnard said had been a huge factor in increasing herd health and milk quality was a new software package.

"Cow manager really has been a major influence on improving the health and management of the cows and with that, milk quality has also increased," he said.

"We are now able to manage the herd more efficiently on the computer and know exactly which cows are at what stages. Our calving index has fallen from 496 days to 392 days and my average open days is down to 116 just with better management."

Although labour is plentiful and relatively cheap in South Africa, the Nel farm is hoping to invest in robotic milking systems in the future.

"It takes a lot of time to move the different milking performance groups to the milking parlour, three times per day," Mr Barnard said. "This would be easier to manage with a number of robotic milking units on the farm perhaps in different areas. It would help save time and labour costs in the long run."

Even with the current political uncertainty in South Africa, this farm is confident enough of its future to invest heavily to make the business more efficient and to put it in a good place to tackle any price fluctuations that might lie ahead. D

Fans and water misters keep cows cool ahead of milking.

A new 64-point DeLaval rotary parlour was installed two years ago.

Nuffield boosts leadership confidence

Key points

- ✔ Nuffield scholarship helped develop leadership skills
- ✔ Study looked at better use of effluent
- ✔ Developed contacts around the world

COHUNA, Vic, dairy farmer John Keely was always happy to help local farming and football organisations, but never really considered himself leadership material. However, three years after being sponsored by the Gardiner Dairy Foundation to complete his Nuffield scholarship, the recently elected United Dairyfarmers of Victoria (UDV) vice-president says it has changed his life.

Mr Keely had never applied for a job and the thought of signing up for a Nuffield Scholarship and then writing a report was almost enough to put him off.

Now he says he probably wouldn't have taken on the UDV role without the confidence and contacts gained from the scholarship.

"I'd like to think it made me a better farmer who's better able to contribute to the dairy industry," he said. "I learned to question things a bit more; get more information and make a balanced decision. That's really helped my role on the UDV.

"When you go to the next level, it becomes more complex and challenging, but at the same time it's really rewarding."

Mr Keely has no political aspirations and will confine his contribution to the dairy industry and football through the Central Rivers board, but he now feels better equipped for these roles.

He is a fifth-generation dairy farmer who joined the family farm at the end of 1982 during what was considered the worst drought in history, though it's now way down the order.

Milking more than 300 mostly Holstein cows, Mr Keely had earlier considered applying for a Nuffield Scholarship but needed a topic to research.

"A bit later, I was sitting on a tractor pushing up manure and thought there must be a better way to utilise this; that's how the topic evolved," he said.

Mr Keely liked the idea of travel and research but admitted report writing wasn't one of his strengths until he came up with an innovative solution — taping relevant details on a Go-Pro and having notes transcribed and shared with the dairy farming community.

John Keely in India on the Nuffield Global Focus Program, a six-week program looking at agriculture globally, with visits to Singapore, India, Qatar, Turkey, France and United States (Washington DC and Nebraska).

'A bit later, I was sitting on a tractor pushing up manure and thought there must be a better way to utilise this; that's how the topic evolved.'

"I thought it would be a challenge and if I didn't go, I was never going to be happy with myself," he said.

The scholarship took Mr Keely to Europe and United States where he witnessed many innovative waste systems and learnt how strict regulation inspires innovation.

Ultimately, he stuck with his waste management system but has become more strategic in its application, resulting in significant on-farm improvements.

However, the benefits of the 2016 scholarship went much deeper.

"I've now got a good idea of what's going on in different countries and myriad contacts all over the world," he said. "The information you pick up is invaluable and challenges your thinking and your planning, but it also gives you confidence to get out there and stand up in front of people."

Mr Keely doubts he would have taken on the UDV vice-presidency without the Nuffield experience. "It was probably the fact that I went through the application process and then did the program that gave me the confidence," he said.

"I came straight from school to the family farm so never had to apply for a job. Each step of going through this process meant I gained a better understanding of things.

"When you sit on the outside, it's very easy to have a simplistic view of the world and it definitely helped my leadership skills."

Mr Keely has been in his new role

since December but has been on the UDV policy council since 2009. At 53, Mr Keely was one of the older Nuffield Scholars but he said it was suitable for anyone.

"There's a broad cross-section of ages and I'd definitely recommend it to anyone; it's well worth it," he said.

For Mr Keely, it came down to good timing. "It was perfect," he said. "I had the idea and my son Harrison had come home to work on the farm and my Dad was still there which allowed me to do 16 weeks of travel."

Buoyed by his experiences, Mr Keely plans to continue farming and stay involved with the UDV and Central Rivers board. "I've got no political aspirations outside the UDV and I love the farm and have got no desire to do anything else," he said.

The Gardiner Dairy Foundation is encouraging aspiring Victorian dairy leaders to apply for its Nuffield Scholarship with applications now open for the program's 2020 intake. Applications for the 2020 Nuffield Scholarships close on Friday, June 14. For more information, visit <http://nuffield.com.au/>.

For more information about Gardiner Dairy Foundation please go to <www.gardinerfoundation.com.au> or contact Richard Meredith, email <richard.meredith@gardinerfoundation.com.au>.

Fresh insights for young dairy professionals

TWO south-west Victorian dairy farmers gained fresh insights into how their New Zealand counterparts are tackling production and environmental issues during a recent study tour.

Grassmere's Majella Ryan and Dixie's Tom Stuart were among seven young dairy professionals to take part in the eight-day United Dairyfarmers of Victoria-run New Zealand study tour funded by the Gardiner Dairy Foundation. It aims to build the leadership capability of young people in the Victorian dairy industry.

A medical scientist, Ms Ryan works full-time at Warrnambool Base Hospital's pathology department while living and helping on her family's small 60-cow dairy farm at Grassmere with her father Pat and brother Matt.

A relative newcomer to the industry, Mr Stuart didn't have any dairy experience before moving to Terang as a teenager but now he's keen to learn more and stay working in the field.

Both young farmers say the tour opened their eyes to the broader picture of dairy farming while developing new connections with like-minded local farmers.

For Ms Ryan, the tour showed how New Zealand farmers focus on costs and production outcomes while changing farming methods to improve the environment.

"They have a system that places a lot of emphasis on the value of production and breeding," she said. "They have a good grasp of costs and are very focused on what their cows are producing. I think it's something we could do more in Australia."

Both noticed a disconnect between the city and farming, partially due to environmental concerns. One of the big issues facing New Zealand farmers is government legislation forcing them to cut nitrate leaching by at least 30 per cent.

Michael Farmer (sharemilker, Winton, NZ), Tom Ryan, Lauren Peterson (tour leader and UDV policy councillor), Leica Manners, Amabel Grinter, Majella Ryan, Rachael McGrath, Danielle Wright, Ashley Eldridge (Gardiner Dairy Foundation) and Tom Stuart.

"For some farms, this means significant changes to the way they manage pastures," Ms Ryan said. "The general public was, rightly or wrongly, blaming dairy farmers for their deteriorating rivers so they've had to counteract that to improve their public image."

Mr Stuart milks 500 cows at Dixie and says the New Zealand tour was inspiring.

"I'd never done anything as big as this," Mr Stuart said. "Being able to get out there and experience things and look at different ways of farming was really helpful. People farm in different ways and it's good to learn more skills and ideas and bring them back on farm."

Mr Stuart wanted to compare cow management and use of centre pivots. "How they use the water that flows down from the alps to the Canterbury Plains was one of the most interesting things and they use different tools to measure pastures," he said.

The different methods prompted much discussion about what could apply locally. "You can always try different things or at least keep in mind how others do things," Mr Stuart said.

"I lived on a beef property when I was young and didn't have any dairy industry experience until I started milking cows when I was 14. I enjoyed it and was offered a job and I've been working full time for three years."

Mr Stuart completed a school-based apprenticeship and is now studying a diploma in agriculture and the tour has inspired him to look at all career possibilities in agriculture.

"We had a great bunch of people and we all bonded and learnt from each other," he said. "Going to New Zealand showed me there are so many pathways in dairy and agriculture and it inspired me to go for what I want in life."

The participants from the study tour will be sharing their learnings at the 2019 UDV AGM and conference on May 10.

Webinars drive manufacturing insights

Key points

- ✔ Webinars help farmers planning to go into manufacturing
- ✔ Dubbo farm's move into small-scale manufacturing helped family business remain viable
- ✔ Key is to focus on high quality

DAIRY Australia's Dairy Manufacturing Workforce Webinar series is proving to be a valuable resource for dairy farmers and small-scale dairy manufacturers.

On May 22, subscribers to the webinar series will hear from The Little Big Dairy Co's Emma Elliott, who entered small-scale manufacturing in 2013.

Ms Elliott's family, the Chesworths, has been dairy farming for eight generations, with a registered herd of Holstein cattle based in Dubbo, NSW.

The Chesworth family's prefix is Tomargo Recluse Holsteins, currently milking 1000 cows across three herds, three times per day.

For the Chesworth family, the decision to start their own manufacturing operation on the family farm was driven by their deep-seated passion for dairy farming.

'It was brave and a big risk, but we had to back ourselves and be sure we were making the right decision.'

"My dad and brother get out of bed every day at 2.30am for the morning milking — and you don't do that unless you have a passion for dairy farming," Ms Elliott said.

"We started manufacturing so we could remain viable as dairy farmers, and continue doing what we love."

Before beginning her operation, Ms Elliott visited other small-scale manufacturers in Queensland, Tasmania and Western Australia, who shared their knowledge and provided guidance on how to break into boutique processing.

Ms Elliott spent a significant amount of time locating and studying the requirements for entering the manufacturing space, including the regulations that applied — much of which is now freely available on the Dairy Manufacturing Resource Centre.

Today, The Little Big Dairy Co is a rapidly growing operation which operates the manufacturing, distribution and marketing side of the business.

"We invested in five delivery trucks and a semi-trailer, which we operate out of our farm factory warehouse," Ms Elliott said. "This enables us to service all of our customers directly without using third-party distributors, offering a service that matches the quality of our offering."

In her webinar presentation this month, Ms Elliott will share her tips for other dairy farmers who are considering taking the step into manufacturing.

"One issue we faced initially was that the bank said no to us with our business plan to build the factory, with the dairy industry being in such dire straits, so we sold some cows to invest in our processing facilities," Ms Elliott said.

"It was brave and a big risk, but we had to back ourselves and be sure we were making the right decision."

For Ms Elliott, one of the most important piece of advice she offers prospective small-scale manufacturers is to focus on quality control.

"In this boutique area, it's very important we don't comprise on quality," she said.

"It is important to have set roles and ensure everything is done to the highest standard, you can't be out there milking the cows and running a factory and expect it all to be perfect.

Jim and Emma Elliott manage the processing, distribution and marketing side of the family dairy farm brand.

Emma Elliott's five tips for prospective manufactuers

1 ALWAYS make quality your priority
2 LEARN as much as you can from other small-scale manufacturers
3 BE ready for setbacks — it won't always be easy, and you may need to take some risks
4 THINK outside the box on how to source your capital to invest
5 ACCESS the latest information at <manufacturing.dairyaustralia.com.au>

"One bad experience with a small processer can compromise it for the rest of us."

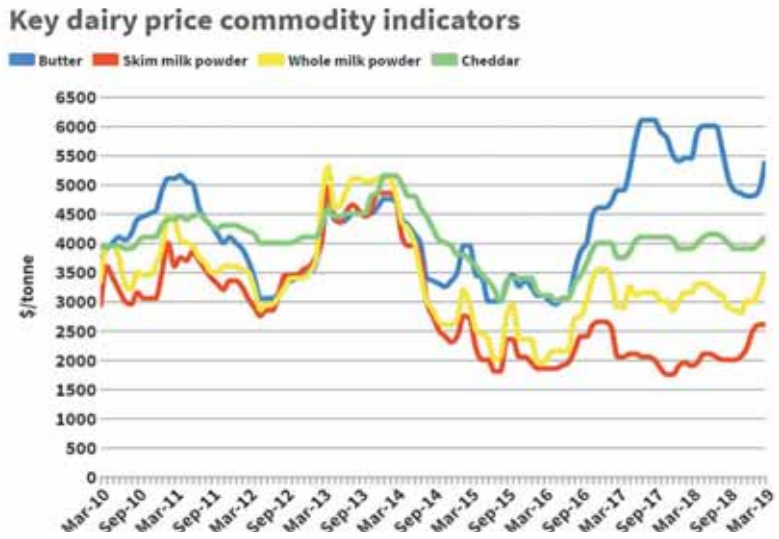
Dairy farmers can register for the Manufacturing Workforce Webinar Series via Dairy Australia's Manufacturing Resource Centre at <http://manufacturing.dairyaustralia.com.au/learning-centre/manufacturing-workforce-webinars>.

Speculation intensifies around prices

By **John Droppert**
Senior industry analyst
Dairy Australia

Key points

- ✔ Commodity prices firm
- ✔ Shorter-term movements reflect uncertainty around global production
- ✔ Competition for milk a key factor in Australia
- ✔ Shortages push the cost of milk beyond its immediate input value



AS farmers nervously await a definitive autumn break, speculation is concurrently intensifying around 2018/19 farmgate milk prices. Some processors have made early announcements, and more are likely to follow suit, as the battle to secure milk from out-of-contract farmers (and those prepared to repay upfront incentives) heats up. Others may hold their cards closer, in the hope of firming up sales contracts, securing extra information to build the business case.

On the information front, the global dairy market is keeping everyone guessing. To be clear, commodity prices, in general, are at similar or better levels to last year, and a 5-cent lower AUD/USD exchange rate adds helpfully to Australian dollar returns.

The shorter term movements are the uncertain part. As the southern hemisphere winds down, further tightening in Oceania supply combined with uncertainty around northern hemisphere milk production has kept dairy commodity prices firm.

European milk production trends are highly varied by country (the United Kingdom and Ireland being up, France and Germany down, for example), while the United States posted a (very slight) decrease in milk production for March. Drier conditions in New Zealand manifest as a February slowdown in milk production, after strong gains for the season to date. This in turn helped further, consecutive, gains in GlobalDairyTrade (GDT) pricing that have underscored continued market support. At the same time, Australia's milk production continues to trail 2017/18, and the outlook for 2019/20 is heavily rain-dependent, but with the strong likelihood of an additional volume decrease.

At a commodity level, butter prices have continued to increase locally, driven by extremely tight supplies in Australia and increasingly limited spot availability in New Zealand. This has posed an interesting contrast to European prices, which continue to weaken in the lead-up to the northern hemisphere season peak. Imports of butter into Australia are likely to grow further, with reports of additional shipments on the water and more food manufacturers carrying out trials of European-sourced product.

'To be clear, commodity prices, in general, are at similar or better levels to last year...'

Having had an impressive run in the immediate post-intervention period, skim milk powder (SMP) prices appear to have approached a ceiling. Buyers who extended their forward coverage have slowed their activity, while sluggish northern hemisphere markets had stretched the 'Oceania premium' as local pricing increased. The modest retreat at GDT event 232 (March 19) did flag some closing of that gap, but with seasonal easing likely in Europe and the US, a premium is likely to persist.

Overall, the market for SMP is in a far better place than any time in the past four years.

With whole milk powder (WMP) remaining a low priority for many Australian manufacturers and New Zealand's February milk production closing on prior year levels, pricing firmed this month. Expectations seem to favour prices remaining supported in the months ahead, although some additional volumes are likely to emerge from those European countries under pressure to get peak milk through plants.

Cheddar pricing has edged higher, although activity seems limited and the upward pressure is primarily linked to strong numbers for other product streams. Stronger northern hemisphere pricing (in particular a recovery in US indicators) is also contributing as the market searches for direction in the lead-up to the next round of Japan negotiations.

The direction that cheese prices take both before and at these negotiations will be a major information point for those building a budget to purchase milk in 2019/20.

This market unknown will potentially be dwarfed by competitive factors, however, as shortages push the cost of milk beyond its immediate input value. For farmers, this will mean more announcements, and provide something other than the weather app to keep an eye on. D

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Genomics: dairy's quiet revolution

Key points

- ✔ Genomics has delivered on promise
- ✔ Farmers increasingly using genomic information
- ✔ Has resulted in unintended consequences

By **Carlene Dowie**

A HIGH-TECH revolution is occurring on Australian dairy farms but it's not one that's readily visible. The technology is not a bright, shiny piece of machinery, nor some fancy computer software.

But it's embedded in almost every calf born on dairy farms and is having a profound impact despite being around for only a decade.

It's genomics — the use of genetic information (in the form of DNA markers) to predict the performance of animals. This is being used to select the best performing animals from which to breed — both the bull sires bred by artificial breeding companies worldwide to supply semen to the dairy industry and the heifers and cows used by farmers to breed replacement animals.

Australian Professor Ben Hayes was one of the co-inventors of the genomic prediction technology and led much of the work that saw it adapted into the Australian dairy industry's breeding values.

He told the Herd '19 conference at Bendigo, Vic, in March that the technology had delivered on much of its early promise.

Farmers at both that conference and the Australian Dairy Conference in Canberra in February described how they were using genomic information as a routine part of breeding decisions on their farms.

But a word of warning was sounded at the Bendigo conference — with a Dutch herd improvement manager providing insight into unintended consequences of genomic selection.

Prof Hayes told the conference the idea that DNA could be used to identify the best performing animals had been researched since the 1960s.

The initial focus was on finding the five or so genes that would explain the big differences in cow performance. By 2000 researchers realised these genes of large effect simply did not exist. For example, the gene with the largest effect of production of kilograms of protein explained only about 2 per cent of the variation in animals. "In fact, we have lots of genes of small effect," he said.

Tim Jelbart: genomic test results are now a critical part of decisions about what to do with heifers on his family's farm.

Professor Ben Hayes: genomics has delivered on its promise of an increased rate of genetic gain

Craig Lister: has used genomics to more intensively and accurately implement his breeding strategy.

The breakthrough in 2001 was when Prof Hayes and his fellow researchers worked out a way to use genome-wide markers and statistical calculations to capture the contribution of all the genes of small effect.

But this remained a theoretical computer simulation until 2008 when cheaper genetic tests — called SNP arrays — were developed that allowed widespread DNA testing.

The dairy industry was extremely well placed to take advantage of this as it had banks of semen from progeny test bulls (to provide the genotypic information) as well as progeny test records (to provide the phenotypic information) that was needed to make genomic selections.

The first genomic Australian Breeding Values were released in 2010. Genomics have now largely replaced progeny-test programs and farmers are using more genomically proven semen in their breeding programs each year — to the point where it makes up almost half of all semen used on farms in Australia.

Farmers in some other countries have been even more aggressive adopters of the technology with genomically proven semen being used for nearly all artificial insemination breedings.

Increasing numbers of heifers and cows are also being genomically tested and farmers are using this information to make decisions about what semen they will use over those animals.

Prof Hayes said genomics had delivered on its promise of an increased rate of genetic gain. It had allowed the identification of top bulls at a younger age, reducing the generational interval of those animals from eight years to two years.

Young genomic bulls were on average $30 better on the Balanced Per- ▶

29H018698 *Superhero x Powerball P x Tango*

ABS JERONIMO-P ET

- Elite AU ABV(g) & BPI$ +389
- Positive feed saved sire
- Heterozygous polled (P)
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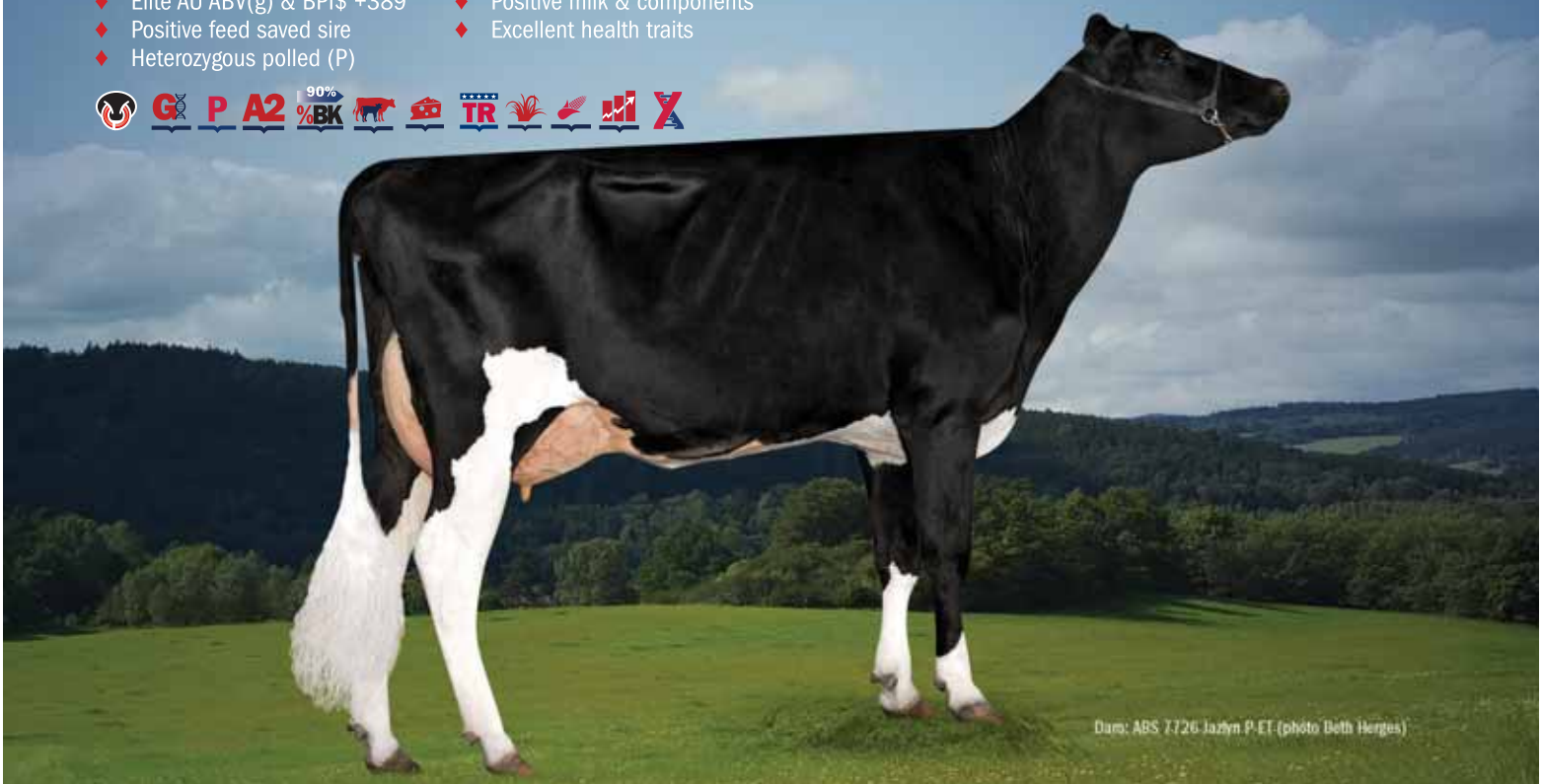
- Excellent health traits



Dam: ABS 7726 Jazlyn P-ET (photo Beth Herges)

29H017747 *BALISTO x Epic x Manoman*

COOKIECUTTER HARPER-ET

- #1 multi country proven sire in Australia
- Breed leading Australian Breeding Value BPI$ +397
- Proven performing cow family
- Top ten ranking sire in multiple countries

29H017458 *Perseus x Supershot x Numero Uno*

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ABS ICON SIRE

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- Elite health traits
- Elite productive life +7.8
- Positive feed saved sire

29H017429 *Jantana x Supershot x Mogul*

RELOUGH CLINCHER

- Elite ABV(g) and BPI$ +383
- Elite health traits
- Moderate size with dairy strength
- Positive feed saved sire

Harper dam: Cookiecutter Epic Hazel-ET EX-91 (photo Cybil Fisher) – Persuade 4th dam: Larcrest Comet VG-87 (photo Beth Herges) – Clincher dam: Relough Supershot Crimson VG-87 (photo Jane Steel)

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Figure 1: Genomic selection — genetic gain daughter fertility

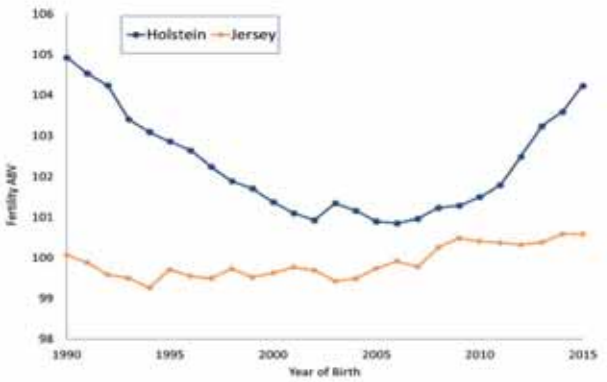
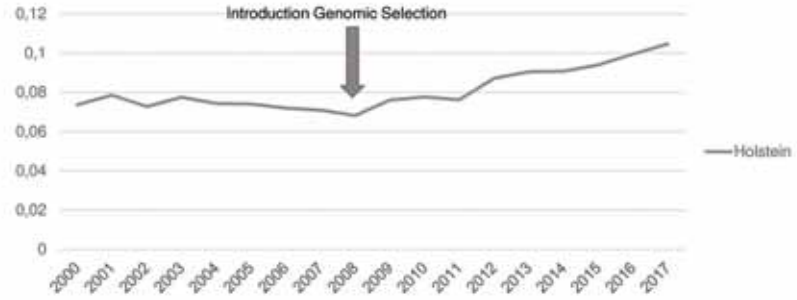


Figure 2: Genomic inbreeding Dutch Holstein AI bulls



formance Index than the top 50 bulls with daughters.

Genomics has also allowed artificial breeding companies to screen more animals to identify the best. This has led to a rapid drop in the age of sires used to breed sires.

Prof Hayes said the genetic gain for BPI had increased but it was too early to say if it would double as had been forecast.

But genomics had led to a rapid improvement in some traits, particularly previously difficult-to-measure traits.

The clearest example of this was fertility. The trend for daughter fertility had turned around in 2010 and was now heading back to the levels in the early 1990s, when declining fertility had started to become apparent in herds. Genomics had played a key part in this as had the collection of more data.

Farmer experience

Farmers are increasingly using genomic technology to guide decisions on their farms.

Datagene board member Craig Lister, from Calivil in northern Victoria, told the Herd '19 conference genomic testing had enabled more accurate and intensive implementation of his breeding strategy.

That strategy — to breed productive, healthy and fertile Holsteins with robust functional type — had allowed him to lift his below-average herd to being in the top 10 in Australia in just over a decade.

Mr Lister started genomically testing his heifers in 2011 and his cows in 2014. He now uses sexed semen on the highest genetic merit animals in the herd and uses the genomic results for complementary matings for those animals, so low heritability traits such as daughter fertility can be correctively bred from the first joining.

Leongatha South, Vic, dairy farmer Tim Jelbart told the conference he had gone from knowing nothing about genetics four years ago to using it frequently in his farm decision making.

Mr Jelbart said his family's operation was producing about 500 heifers a year and they simply did not have the time to "eyeball them all" to identify the best animals.

Genomic test results were now a critical part of decisions about what to do with their heifers.

The Jelbarts were aggressively targeting daughter fertility, ensuring only animals with positive daughter fertility breeding values as well as high BPI were used to breed replacements for their herd. They used sexed semen over these animals.

The genomic data was also used to select surplus animals to be sold to the export heifer market and to verify parentage of herd animals.

Waygu semen was used over the bottom end, providing an animal for a lucrative beef market.

Word of warning

Dutch-based CRV manager innovation Dr Sijne van der Beek provided a word of warning about genomic selection.

Dr van der Beek said an unintended consequence of the technology was increased inbreeding.

He said initially, it had been thought genomic selection would lead to less inbreeding as it allowed more animals to be tested and assessed for breeding programs than a traditional progeny-test program.

Progeny-test bulls had been selected based on family information, so were therefore more likely to be related, while genomic selections were based on the genes, so it had been assumed the animals would be less likely to be related.

There were two problems with this. Firstly, genomics looked at markers to estimate the genes — it did not look at the genes directly.

Secondly, there was a bias in the source of the information that guided the breeding values.

"We fall into the information trap," Dr van der Beek said.

The dominant families were on more farms so there was simply more information available about them. The outcross families had less information available about them to help identify good DNA markers in them.

Another unexpected consequence was that breeding costs for artificial breeding companies had increased. It had been expected that these would decrease because genotyping is cheaper than progeny testing.

"The two are related," Dr van der Beek said. "Especially for the Holstein breed, the competition between the large global players has intensified.

"They pay a lot to get access to the very best females and invest large sums of money in embryo production and recipient management.

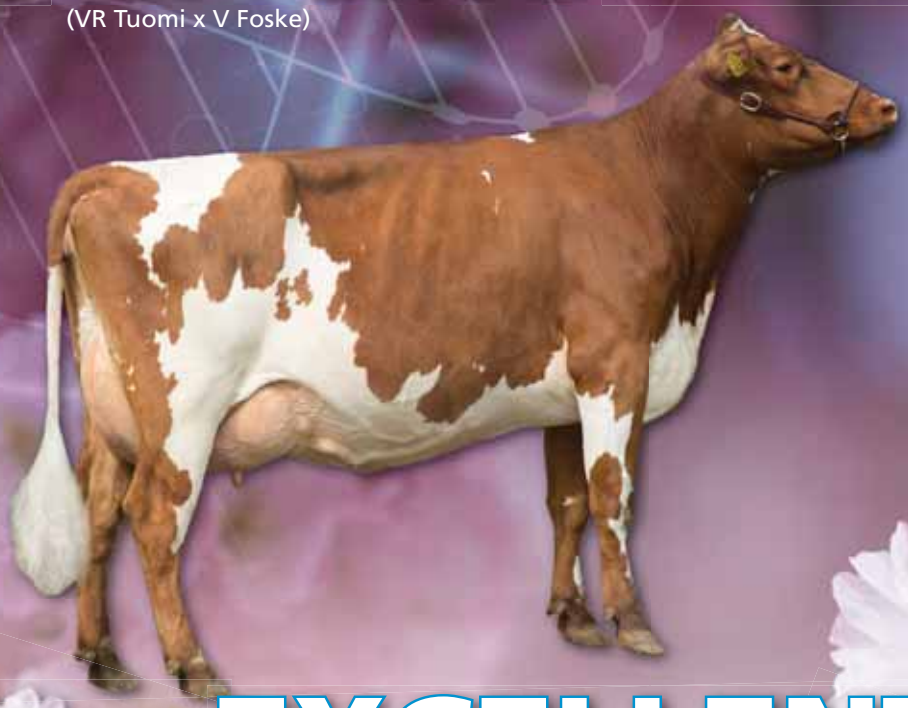
"Generation intervals are ultra-short and only the very best males and females, all related, are used."

Dr van den Beek said avoiding this problem required targeted data collection of outcross animals and more focus on smaller breeds. D

More reports from the Herd '19 conference will appear in future editions of the *Australian Dairyfarmer*.

VR TOKYO

(VR Tuomi x V Foske)



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Agriculture Victoria's principal research scientist Jennie Pryce says health and well-being breeding values are not far off for the dairy industry.

Balanced approach key to better values

Key points

- ✔ Revolution coming in breeding value development
- ✔ New mastitis risk and lameness risk traits under development
- ✔ Genomics accelerates genetic gain

By **Catherine Miller**

BREEDING a better dairy cow for Australian conditions requires a balanced approach, according to Agriculture Victoria's principal research scientist Jennie Pryce.

But she says the three DataGene selection indexes released in 2015 — which incorporate production, health, fertility, survival and functionality traits — have made bull selection fairly simple.

About 80 per cent of farmers are using the profit-driven, Balanced Performance Index, while the Health Weighted Index and Type Weighted Index are also proving useful for those conscious of health or conformation in their herds.

Dr Pryce told the International Red Dairy Breeds Federation Conference in Mount Gambier, SA, in March, a revolution was coming with researchers using phenotyping to help farmers breed cows with lower risk of animal health issues such as mastitis.

Dr Pryce predicts a breeding value for mastitis risk that includes farmer-collected mastitis records, somatic cell count and udder depth could be available within a year or so but one for lameness was further off.

"It is much harder to work with these traits where the genetic component is not high but by successfully breeding for fertility, which also has low heritability, we have shown it is possible to still make progress," she said.

'It is much harder to work with these traits where the genetic component is not high ...'

She said more farm data, particularly clinical cases of mastitis and information on lame cows in a herd, not just those treated with antibiotics, would speed up the development of these new breeding values.There might also be opportunities to use other data sources, such as screening milk using mid-infra-red spectrometry (part of routine herd-testing). "Certain profiles may tell us which cows are at risk," she said.

Genomics had created many opportunities for the Australian dairy industry in recent times especially accelerating genetic gain.

Even more beneficial was the ability to select for hard-to-measure traits such as feed efficiency and heat tolerance.

She said Australia had become a world leader in breeding for feed efficiency, with the Feed Saved breeding value released in 2015 .

Incorporating vast amounts of feed efficiency data from reference populations in the Netherlands and the United Kingdom had made this figure more robust and Dr Pryce said DataGene and Agriculture Victoria were working to expand this further.

Heat tolerance genomic breeding values released by DataGene in late 2017 were also helping farmers breed dairy cattle better suited to Australian conditions with some bulls found to sire daughters less likely to see a drop in milk yield as temperatures rise. D


WESTCOAST PERSEUS


PROGENESIS HAPPYDAY

SEMEX 2019 HOLSTEIN AUTUMN PACK

AVERAGES FOR THE PACK

Source: Source: CDCB-G & HAUSA-G 04-19, ABV(g) April 2019

SemenCode	NAME	Sire	Mgs	TPI	NM$	PL	SCS	DPR	BPI	BetaCasein	RRP Exl. GST
0200H010777	**WESTCOAST PERSEUS**	PENMANSHIP	DOORMAN	2633	750	5.5	2.63	2.9	375	A2A2	$35
0200H011078	**PROGENESIS METHOD**	GRANITE	PENMANSHIP	2648	755	5.1	2.75	3.5	324	A1A1	$30
0200H011080	**PROGENESIS HAPPYDAY**	HARMONY	DENVER	2740	863	5.9	2.65	3.5	306	A2A2	$32
0200H011242	**PROGENESIS PAVAROTTI**	FRAZZLED	SILVER	2702	843	5.4	2.72	1.0	310	A2A2	$30

GROUP AVERAGE

TPI	NM$	Milklbs	Fatlbs	%Fat	Protein lbs	%Protein	PL	SCS	DPR	CE	PTAT	UDC	BPI
2681	803	1272	75	0.10	55	0.06	5.5	2.7	2.7	6.4	1.82	1.81	329

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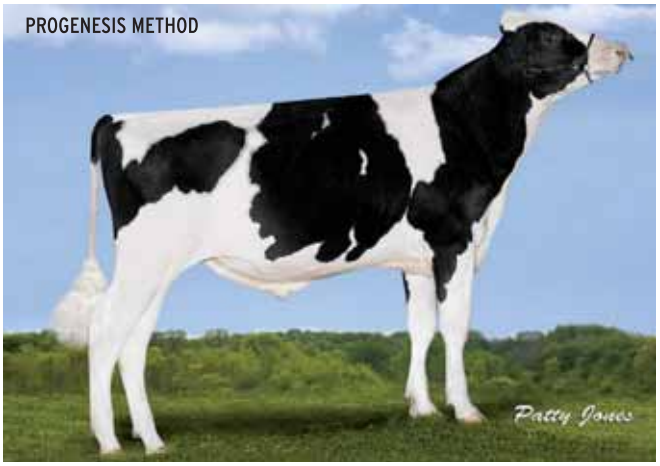
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AGR	Agri-Gene
ALT	Alta Genetics
AXB	Auzred XB
CRV	CRV Australia
ECL	Eclipse Genetics
GAC	Genetics Australia
GGI	GGI Australia
IRG	Ireland Genetics
LIC	Livestock Improvement
SEM	Semex Australia
SHG	Shamrock Genetics
SXT	ST Genetics Australia
TLG	Total Livestock Genetics
VDG	Van Diemen Genetics
VIK	Viking Genetics
WWS	World Wide Sires
TBA	To BE Advised

Good Bulls Guide for Holstein — Balanced Performance Index (BPI) — Australian Proven

				Indices				Production Traits				Survival		Conformation Traits			Workability				Daughter Fertility		Cell Count		Feed Saved	
Rank	Bull ID	Bull Name	Source	BPI $	BPI Rel	HWI	TWI	ASI	ASI Rel	No. Dtrs	No. Herds	Sur-vival	Rel	Over Type	Mam Syst	Type Rel	Milk Spd	Temp	Like	Rel	Dtr Fert	Rel	CC	Rel	Feed Saved	Rel
1	14HO07328	COASTAL-VIEW MOOKIE	WWS	394	87	291	409	282	98	395	40	111	76	105	107	84	102	102	104	79	105	86	137	94	-69	42
2	MAEBULL	CALISTER MAEBULL	GAC	334	84	289	327	142	95	126	35	110	69	102	101	81	101	99	103	83	110	72	192	86	17	41
3	CBSUPERSHOT	COGENT SUPERSHOT	SXT	325	86	286	315	138	95	183	43	110	77	105	103	87	97	105	106	88	110	85	193	90	15	43
4	29HO16714	DE-SU 11236 BALISTO-ET	ABS	311	87	232	318	230	94	105	26	108	81	103	102	90	102	102	106	91	99	88	159	91	0	44
5	29HO16887	DE-SU 11620 NIRVANA-ET	ABS	307	84	243	336	185	92	91	30	109	77	109	109	85	102	104	105	88	101	85	154	89	-59	42
6	29HO16667	DE-SU 11228 TOPSY-ET	ABS	305	88	207	305	269	97	214	39	105	80	102	102	87	101	98	100	91	99	89	144	92	-65	43
7	FOLKLAW	CARENDA FOLKLAW 339	GAC	301	76	220	280	231	86	58	28	105	67	101	102	75	102	104	105	72	96	66	159	70	-16	39
8	0200HO06267	GEN-I-BEQ LAVAMAN	SEM	298	89	249	266	183	97	267	53	105	85	101	107	89	102	96	102	94	108	91	133	96	84	44
9	GEEMCEE	RENGAW MANOMAN HUMMER-ET	GAC	276	80	194	201	196	91	72	29	105	69	95	100	78	100	103	104	79	106	70	157	78	-82	40
10	0200HO07450	AMIGHETTI NUMERO UNO	SEM	275	91	239	259	92	98	637	115	110	87	102	106	95	104	102	104	93	111	93	161	97	-47	46
11	29HO16888	SEAGULL-BAY MVP-ET	ABS	273	91	195	292	184	99	1,130	159	111	84	109	109	94	102	105	107	96	102	90	123	96	-135	46
12	ASHMARK	WARRAMONT NUMBERONE DUDE	GAC	273	77	224	221	148	86	53	24	108	68	96	101	78	103	103	104	77	107	66	150	72	19	40
13	14HO06263	HAMMER-CREEK O MAN KODY	WWS	272	90	210	271	176	99	1,149	132	110	83	105	105	87	101	99	104	96	107	92	112	97	-42	43
14	29HO16909	LARCREST COMMANDER-ET	ABS	267	90	185	309	173	98	425	95	110	83	108	108	91	104	104	106	93	101	89	148	93	-204	45
15	MARKKU	KAARMONA MARKKU	GAC	267	82	205	317	139	93	102	41	107	71	115	105	81	102	100	103	82	104	70	146	80	-122	41
16	CRVASTRO	DELTA ASTRO	CRV	260	90	205	267	134	99	529	73	107	83	107	104	87	101	100	103	94	108	90	129	95	-79	43
17	WRANGLER	RENGAW MANOMAN WRANGLER-ET	GAC	255	81	185	229	173	92	88	40	107	71	102	102	80	99	101	103	81	105	71	144	79	-70	40
18	011HO11138	COOMBOONA SUPERSTITION REGAL	ALT	253	88	196	265	120	98	376	71	109	83	103	101	87	102	105	106	87	104	90	182	93	-113	43
19	COGENTTWIST	COGENT TWIST	SXT	252	91	184	222	153	99	796	126	109	91	103	96	94	102	104	105	96	105	94	141	97	-80	45
20	29HO17553	UECKER SUPERSIRE JOSUPER-ET	ABS	250	86	180	227	171	95	157	37	108	78	101	101	88	100	103	106	90	104	86	154	90	-109	43
21	CRVBOUWROCKY	BOUW ROCKY	CRV	250	88	210	267	113	96	170	29	111	81	106	104	88	99	102	105	91	106	87	167	93	-27	43
22	FULLTHROTTLE	CURRAJUGLE FULL THROTTLE-IMP-ET	ABS	249	84	186	212	148	95	115	48	107	73	99	100	82	103	101	102	84	107	78	148	86	-80	41
23	7H11703	MR APPLES ARMANI	GAC	246	84	257	265	61	92	74	51	108	81	105	111	85	101	101	102	87	108	87	146	91	197	42
24	011HO11425	ZAHBULLS ALTA1STCLASS	ALT	243	87	247	280	39	96	310	61	111	78	104	111	89	104	102	106	88	106	84	174	91	71	44
25	SKAIFE	BUNDALONG WYMAN SKAIFE	GAC	241	78	166	198	193	89	57	28	100	66	99	97	73	96	101	100	76	103	68	155	74	-30	38
26	CARLITION	KAARMONA CARLITION	ABS	239	82	221	190	73	94	88	31	111	71	99	97	76	102	102	103	82	113	75	164	83	38	39
27	LEVIGOLD	EMU BANKS LEVIGOLD	GAC	238	78	219	260	80	88	59	20	108	69	110	106	79	102	94	102	79	107	68	164	72	41	40
28	VIZABULL	CARENDA VIZABULL 375	GAC	237	82	184	210	130	93	167	46	105	71	100	101	84	101	98	100	79	107	66	151	80	-43	42
29	JANEK	RENGAW JARDIN JANEK	ABS	236	86	200	232	138	96	205	54	107	77	103	105	82	100	103	103	87	100	80	155	89	49	41
30	CHRISTMAS	EMU BANKS CHRISTMAS-ET	GAC	234	92	139	222	218	100	2,437	302	104	90	105	99	97	101	101	103	99	99	94	124	98	-125	47
31	7H11314	MOUNTFIELD SSI DCY MOGUL	GAC	233	91	197	290	118	99	209	35	111	87	109	111	94	105	104	108	95	102	93	123	96	-33	45
32	0200HO06480	VAL-BISSON DOORMAN	SEM	233	90	192	280	108	97	278	76	110	85	108	110	95	93	103	106	91	103	91	190	95	-64	46
33	29HO17607	BRYCEHOLME SS BOASTFUL	ABS	233	87	200	207	97	96	240	42	109	78	99	101	87	100	101	102	92	110	83	159	90	7	43
34	29HO17573	SEAGULL-BAY SILVER-ET	ABS	232	88	170	260	135	96	220	64	111	80	106	111	91	105	102	107	91	102	87	127	92	-156	44
35	14HO07296	CLEAR-ECHO LEXOR RACER	WWS	232	89	211	240	79	99	921	122	110	80	101	107	87	100	100	100	94	109	87	161	95	4	43
36	MENCHOV	CARENDA PALERMO 270	GAC	230	84	185	239	94	95	139	37	108	71	105	101	82	102	103	106	85	109	71	140	85	-114	41
37	JESSOP	CLEVELAND PALERMO JESSOP	GAC	226	80	179	215	139	91	61	33	106	70	100	99	78	102	101	103	81	106	72	117	78	4	40
38	REACTOR	CARENDA REACTOR 352	GAC	224	81	146	232	211	93	112	30	103	69	105	106	78	103	100	104	77	94	67	118	79	-57	40

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CRV	CRV Australia
ECL	Eclipse Genetics
GAC	Genetics Australia
GGI	GGI Australia
IRG	Ireland Genetics
LIC	Livestock Improvement
SEM	Semex Australia
SHG	Shamrock Genetics
SXT	ST Genetics Australia
TLG	Total Livestock Genetics
VDG	Van Diemen Genetics
VIK	Viking Genetics
WWS	World Wide Sires
TBA	To BE Advised

			Source	Indices				Production Traits				Survival		Conformation Traits			Workability				Daughter Fertility		Cell Count		Feed Saved	
Rank	Bull ID	Bull Name		BPI $	BPI Rel	HWI	TWI	ASI	ASI Rel	No. Dtrs	No. Herds	Sur-vival	Rel	Over Type	Mam Syst	Type Rel	Milk Spd	Temp	Like	Rel	Dtr Fert	Rel	CC	Rel	Feed Saved	Rel
39	GVLIQUIDGOLD	GENERVATIONS LIQUID GOLD	WWS	223	87	157	193	162	96	195	43	105	78	100	102	86	100	96	101	88	102	85	164	91	-60	42
40	29HO12772	BALLYCAIRN OMAN PELLO	ABS	223	89	164	148	156	97	281	54	106	84	93	92	87	100	100	103	94	106	88	156	95	-15	43
41	7H11351	SEAGULL-BAY SUPERSIRE	GAC	223	91	163	183	153	98	341	53	109	88	99	99	95	99	105	107	95	101	93	158	96	-67	46
42	HOMANIFOLD	MAINSTREAM MANIFOLD	SEM	222	91	152	198	179	99	838	70	106	93	100	99	95	99	99	104	94	106	95	129	98	-75	46
43	7H10176	MR REGELCREEK SHOT AL	GAC	222	90	200	212	94	98	434	75	108	87	102	100	89	100	103	103	93	104	91	160	95	72	43
44	7H11163	TIGER-LILLY LADD P-RED	GAC	222	85	205	249	51	92	77	29	109	81	106	106	86	100	101	102	89	110	88	172	90	-19	42
45	NADAL	JET STAR MANOMAN NADARL -ET	GAC	218	83	140	165	189	94	94	36	104	73	98	101	82	101	99	100	85	101	75	134	84	-87	41
46	29HO16955	VIEW-HOME MONTEREY-ET	ABS	215	89	182	210	121	98	499	81	108	80	100	108	90	103	104	105	93	103	86	130	94	26	44
47	JENGOLD	EMU BANKS JENGOLD	GAC	215	80	174	187	108	91	64	20	106	69	102	103	77	101	100	103	79	113	70	116	76	-23	39
48	LIVINGSTON	CALISTER LIVINGSTON	GAC	210	79	147	181	169	89	52	24	105	68	100	98	76	101	102	104	79	100	71	138	76	-39	39
49	OTTMAR	DILEE BUDDHA OLLIE 751	GAC	209	81	173	154	179	93	80	34	102	70	93	98	79	98	102	103	81	99	69	140	78	172	40
50	EKTA	CALISTER PALERMO E 120-ET	GAC	208	76	137	166	161	87	42	23	105	66	100	96	73	101	100	103	74	105	68	131	72	-88	38

Good Bulls Guide for Holstein — Balanced Performance Index (BPI) — Genomic ABV(g)s

			Source	Indices				Production				Survival		Conformation Traits			Workability				Daughter Fertility		Cell Count		Feed Saved	
Rank	Bull ID	Bull Name		BPI $	BPI Rel	HWI	TWI	ASI	ASI Rel	No. Dtrs	No. Herds	Sur-vival	Rel	Over Type	Mam Syst	Type Rel	Milk Spd	Temp	Like	Rel	Dtr Fert	Rel	CC	Rel	Feed Saved	Rel
1	29HO17458	BOGHILL GLAMOUR PERSUADE	ABS	392	66	341	348	169	77	0	0	111	52	101	103	60	102	103	105	64	115	51	174	67	31	31
2	29HO18698	ABS JERONIMO-P-ET	ABS	389	66	336	367	188	77	0	0	112	50	103	103	58	101	102	104	62	113	49	162	67	65	31
3	29HO18863	DENOVO 14520 AMSTEL-ET	ABS	388	66	330	371	184	77	0	0	110	53	101	107	60	102	103	105	64	113	52	160	68	5	31
4	29HO17429	RELOUGH CLINCHER	ABS	383	66	334	343	168	77	0	0	109	52	101	101	59	101	103	104	64	117	51	167	67	51	31
5	07HO13696	SSI SCENARIO LORD	GAC	376	67	319	335	179	77	0	0	112	55	98	107	62	102	102	104	65	115	54	157	68	3	32
6	0200HO10777	WESTCOAST PERSEUS	SEM	375	68	311	345	179	78	0	0	110	59	103	106	65	101	102	104	70	113	59	171	69	-38	33
7	SUPERDAVE	WARRAMONT SUPERHERO DAVE-ET	GAC	374	67	294	344	238	77	0	0	107	56	102	103	62	100	104	104	67	106	56	160	67	22	32
8	7HO14174	OCD ALLTIME LATROBE-ET	WWS	372	66	309	324	199	77	0	0	110	52	98	105	60	100	102	103	62	112	52	167	68	10	32
9	PEMBERTON	CARENDA PEMBERTON	GAC	372	66	306	370	185	77	0	0	109	55	106	108	61	101	103	105	66	109	54	175	66	-43	32
10	ITLETSGO	VOGUE LETSGO TV TL TY CF	GAC	364	66	304	364	176	77	0	0	113	53	106	108	61	102	102	105	65	111	52	154	66	-32	32

Good Bulls Guide for Red Breeds — Balanced Performance Index (BPI) — Australian Proven

			Source	Indices				Production				Survival		Conformation Traits			Workability				Daughter Fertility		Cell Count		Feed Saved	
Rank	Bull ID	Bull Name		BPI $	BPI Rel	HWI	TWI	ASI	ASI Rel	No. Dtrs	No. Herds	Sur-vival	Rel	Over Type	Mam Syst	Type Rel	Milk Spd	Temp	Like	Rel	Dtr Fert	Rel	CC	Rel	Feed Saved	Rel
1	AXBBLACKWOOD	BLACKWOOD PARK BLACKWOOD	AXB	243	76	202	238	179	89	65	10	104	58	102	108	69	103	102	104	67	101	61	106	74	88	33
2	ARBCYGNET	BEAULANDS SWANNIES - ET	GAC	239	79	195	222	150	92	82	33	105	60	101	106	69	104	103	106	82	102	63	117	78	6	33
3	VFOSKE	V FOSKE	VIK	228	92	151	222	182	100	2,108	158	107	93	103	104	94	102	102	105	98	101	97	111	99	-119	43
4	ARBSCAREBEAR	JOHVILLE PARK SCAREBEAR	GAC	213	81	165	135	166	93	86	33	102	66	92	98	77	105	102	105	85	102	66	118	81	68	37
5	VIKBALFA	VR BALFA	VIK	206	83	131	225	188	94	90	17	101	69	106	106	66	102	103	105	88	97	80	113	89	-97	34
6	ARBABBOTT	BEAULANDS ABBOTT	GAC	179	79	109	150	240	92	84	27	101	61	97	97	69	101	101	104	82	97	64	63	80	95	33
7	ARBNICK	ORANA NICK	GAC	166	86	132	208	103	97	218	57	106	75	109	107	77	98	101	104	92	101	80	128	89	-35	37
8	ARBSTEJAC	JOHVILLE PARK STEJAC	GAC	153	68	103	120	129	80	33	18	100	49	97	95	55	102	99	99	71	103	50	117	64	-6	27
9	VIKFERGUS	VR FERGUS	VIK	150	85	117	149	66	96	158	34	104	76	101	102	67	100	101	99	91	103	86	151	91	-71	34
10	ARBBONJOVI	BOSGOWAN BON JOVI	GAC	137	92	88	127	137	100	2,392	270	103	95	101	104	91	101	100	102	99	103	98	82	99	-18	42

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THE Good Bulls GUIDE

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ABS	ABS Australia
AGR	Agri-Gene
ALT	Alta Genetics
AXB	Auzred XB
CRV	CRV Australia
ECL	Eclipse Genetics
GAC	Genetics Australia
GGI	GGI Australia
IRG	Ireland Genetics
LIC	Livestock Improvement
SEM	Semex Australia
SHG	Shamrock Genetics
SXT	ST Genetics Australia
TLG	Total Livestock Genetics
VDG	Van Diemen Genetics
VIK	Viking Genetics
WWS	World Wide Sires
TBA	To BE Advised

Good Bulls Guide for Jersey — Balanced Performance Index (BPI) — Australian Proven

				Indices				Production				Survival		Conformation Traits			Workability				Daughter Fertility		Cell Count		Feed Saved	
Rank	Bull ID	Bull Name	Source	BPI $	BPI Rel	HWI	TWI	ASI	ASI Rel	No. Dtrs	No. Herds	Sur-vival	Rel	Over Type	Mam Syst	Type Rel	Milk Spd	Temp	Like	Rel	Dtr Fert	Rel	CC	Rel	Feed Saved	Rel
1	0200JE00183	SUNSET CANYON DAVID	SEM	265	88	200	301	181	96	203	49	114	81	107	109	89	104	105	108	88	98	87	117	93	-57	42
2	CRVMARVARIE	WALLACEDALE MARVARIE ET	CRV	185	83	144	211	133	95	95	34	104	71	110	107	74	102	105	102	86	97	75	111	84	6	35
3	CSCMELVARA	WALLACEDALE MELVARA	ABS	179	87	164	203	79	97	303	82	109	79	105	111	86	100	102	101	91	101	81	133	91	42	40
4	7J1163	ALL LYNNS VALENTINO IRWIN	GAC	177	89	157	252	64	98	340	58	112	82	111	111	92	103	105	106	94	96	89	152	94	-42	43
5	7J1038	ALL LYNNS LOUIE VALENTINO	GAC	175	92	147	252	67	99	1,692	169	114	93	113	114	98	103	107	108	98	96	95	138	98	-111	45
6	GRIFF	KAARAMONA GRIFFIN	GAC	173	80	118	161	141	92	105	39	107	69	104	104	80	101	105	106	85	100	63	92	76	-68	38
7	TAHBILK	BEULAH TAHBILK	GAC	173	85	110	221	134	96	166	50	108	72	109	108	82	105	107	107	88	95	73	102	87	-139	39
8	VOYAGEDALE	WALLACEDALE MELS VOYAGE	GAC	171	82	126	152	149	94	115	44	103	69	103	102	74	100	102	101	85	98	73	123	83	22	35
9	STACKER	BROADLIN STACKER	GAC	157	77	125	148	121	89	70	26	102	62	103	98	73	100	101	102	80	101	63	120	73	84	35
10	LEVIGENES	BROADLIN LEVI	GAC	157	84	125	164	110	96	201	47	108	69	103	103	74	101	103	104	87	101	74	97	88	40	35
11	AUSSIEGOLD	BROADLIN AUSSIEGOLD P - ET	GAC	150	89	92	201	100	98	454	101	107	84	109	105	90	102	103	104	95	97	87	137	94	-166	42
12	CRVVOYANT	MERSEYBANK CLAIRVOYANT	CRV	139	80	114	161	53	93	96	29	110	66	102	102	77	100	104	103	80	101	68	144	79	-58	36
13	14JE00670	STEINHAUERS SAMSON LEMONHEAD	WWS	134	87	110	148	52	97	297	71	110	75	101	100	87	101	105	105	88	99	80	153	90	-37	41
14	7JE01294	JARS OF CLAY BARNABAS	WWS	132	86	93	176	86	95	144	34	110	77	107	108	89	103	103	106	85	95	83	120	89	-109	41
15	7J1151	BUTTERCREST GALVANIZE	GAC	131	87	92	190	85	97	187	38	113	79	108	107	86	102	105	105	86	94	86	127	90	-102	40
16	SANDBLAST	NOWELL SANDBLAST	AGR	127	92	109	85	112	99	1,323	211	98	95	99	103	94	99	103	103	98	100	96	95	98	131	43
17	ARIES	NOWELL ZODIAC		127	83	87	67	98	94	89	32	101	75	98	96	78	103	101	101	86	101	77	121	85	-20	37
18	011JE1118	ALL LYNNS VALENTINO MARVEL	ALT	127	87	123	169	49	97	207	48	110	79	104	105	81	101	105	104	90	96	87	148	91	64	39
19	CSCAMBITION	RIVERSIDE AMBITION	ABS	125	85	110	103	113	96	175	52	106	76	100	102	81	102	97	99	89	98	78	101	88	153	38
20	BOSMURMUR	OKURA LIKA MURMUR S3J	CRV	125	91	91	83	91	99	787	107	102	93	93	94	92	98	101	100	96	103	96	148	97	24	43

Good Bulls Guide for Jersey — Balanced Performance Index (BPI) — Genomic ABV(g)s

				Indices				Production				Survival		Conformation Traits			Workability				Daughter Fertility		Cell Count		Feed Saved	
Rank	Bull ID	Bull Name	Source	BPI $	BPI Rel	HWI	TWI	ASI	ASI Rel	No. Dtrs	No. Herds	Sur-vival	Rel	Over Type	Mam Syst	Type Rel	Milk Spd	Temp	Like	Rel	Dtr Fert	Rel	CC	Rel	Feed Saved	Rel
1	DOUGGAN	WHITE STAR DOUGLAS	GAC	280	65	208	270	202	76	0	0	108	51	99	103	55	102	102	104	62	101	54	147	69	-27	27
2	PUBLICAN	WHITE STAR PATRICK	AGR	273	65	195	299	209	78	0	0	110	49	107	108	54	104	105	106	62	99	48	104	67	-60	26
3	DOBSON	WHITE STAR DOORMAN	GAC	252	65	187	262	193	75	0	0	110	50	103	104	55	102	103	105	61	99	53	120	68	-9	26
4	MRFERTILITY	BEULAH FERTILITY	GAC	236	65	184	215	142	78	0	0	109	47	103	101	52	100	101	103	64	108	48	122	69	-9	26
5	VALENBLAST	WHITE STAR VALENBLAST	GAC	229	68	180	252	137	79	0	0	110	58	106	111	62	103	105	106	67	98	59	131	71	-55	29
6	MANLY	BROADLIN 179 GLENFERRIE-ET	GAC	223	64	163	237	163	75	0	0	112	49	106	107	54	103	103	106	59	97	48	119	67	-53	26
7	ALGERNON	BROADLIN HILUX	GAC	205	68	134	193	189	79	0	0	108	55	102	105	60	102	102	105	67	100	56	95	70	-53	29
8	LOKI	KAARMONA LOKI	GAC	202	63	156	194	156	75	0	0	105	45	101	102	50	102	102	104	59	101	50	109	68	53	25
9	INVINCIBLE	LOXLEIGH HATMAN VINCE 5963	GAC	200	68	150	247	130	79	0	0	108	54	109	112	61	104	105	107	67	97	57	111	70	-80	29
10	DAMO	BERCAR 214407 9196	GAC	196	63	129	221	152	74	0	0	109	45	106	106	51	103	105	106	58	97	43	120	66	-111	25
11	JETFIGHTER	CAIRNBRAE TOP GUN	AGR	191	68	145	245	134	78	0	0	108	53	109	112	59	100	102	104	66	97	56	128	71	-60	28
12	ASKN	BROOKBORA VALENTINO ASKN	GAC	190	67	139	247	128	75	13	0	114	64	111	112	68	100	104	106	72	96	64	125	65	-97	32
13	AINSLEY	BEULAH BRAX KP 4411	GAC	189	67	109	204	169	78	0	0	104	51	105	105	58	103	106	107	66	98	51	107	69	-159	28
14	SANDBANK	ARALUEN PARK HATMAN SANDBANK	GAC	187	67	115	211	189	78	0	0	108	54	107	107	61	101	102	104	67	97	57	85	69	-62	29
15	GLENFERRIE	KAARMONA GLENFERRIE	GAC	184	69	117	189	165	79	0	0	110	61	104	106	65	102	103	105	70	98	61	90	69	-93	30
16	HIPWOOD	BEULAH HIPWOOD P	GAC	182	64	133	203	118	75	0	0	110	47	107	107	53	102	104	106	58	101	49	104	68	-89	26
17	VALIN	KINGS VIEW VALIN 4697	GAC	180	69	153	262	78	79	2	0	113	59	113	115	63	103	105	107	67	96	60	130	70	-77	30
18	SEAHORSE	ARALUEN PARK SEAHORSE	GAC	179	69	126	191	138	79	0	0	110	59	106	105	64	102	101	104	69	100	60	102	70	-46	30
19	POLLEDGOLD	BROADLIN 565 OLIVER 3	GAC	173	65	127	227	112	76	0	0	109	51	109	110	56	101	105	106	59	98	53	113	69	-97	27
20	CSCSHADOWMAN	MURRAY BROOK SHADOWMAN	ABS	173	68	136	225	109	79	0	0	109	55	107	111	62	103	105	107	67	96	58	122	70	-51	29

Tips for using activity meters

Key points

- ✔ Farms, especially big farms, increasingly using activity meters
- ✔ 90pc says they make a significant contribution to farm business
- ✔ Planning critical to get best result

By **Pauline Brightling**

SOME dairy farmers are now using activity meters to assist with breeding and managing their cows. What are their experiences and what tips and traps can they share?

In the past 12 months TechKISS project has been exploring these questions with NSW farmers. The aim is to identify the things that lead to successful decisions and implementation, without a commercial bias.

The project started with a survey of all NSW farms and followed up with more detailed information from visits and input from 39 farmers.

These case study farms have provided a wealth of wisdom for others considering purchase or looking to get the best from the tech they are using.

Activity meters in Australia

There are currently 16 different products on the market in Australia. Some of them are essentially the same piece of technology under different brand names.

By far the most common are collars, but activity meters in ear tags, leg tags and a rumen bolus are also available.

The early activity meters were simple step counters, but in the past five years these have been superseded by new position-detecting technology (equivalent to the tech used in smart phones).

In addition to detecting movement, some devices measure rumination, temperature and/or respiratory rate and incorporate this in their fertility and health calculations. Including more of these elements can improve the accuracy of the algorithms to pick cows on heat, and provide alerts for different types of disease and stress.

These may be optional features which farmers can have 'switched on' when the product is purchased.

Activity meters store data over blocks of time (varies between 15 minutes to two hours) and transmit it at a set radio frequency when they come into range of an antenna. The original activity meters were only read when cows came to the dairy, but current activity meters can be read over longer distances (varies from 100 metres to one kilometre).

Some activity meters can now be detected over a range of up to one kilometres away with well-located antennae.

Some products upload to a local computer and some send data directly to the cloud.

Like all tech, the widget is only part of the story — the software that runs it and interprets and displays the data is just as important. The more data available, the better that the software can be optimised, so there have been lots of updates to improve reliability in Australian conditions. These updates are usually done remotely by the developer.

Some activity meters share their data with other technology (such as drafting gates, herd management software) and some don't. This is an important feature to think about when considering a purchase. If activity meters are compatible with other technology on the farm, it avoids the need for double entry of data.

How many farms are using activity meters?

In 2018 activity meters were used on 26 per cent farms in NSW, particularly the larger farms (see graph). Virtually all are collars, with a few farms also using ear tags. Some 61pc were purchased in the past two years; 72pc are measuring rumination.

In NSW (in year-round calving systems) collars are primarily being used for heat detection and sick cow alerts.

The case study farmers said their main fertility-related benefits from using collars were:

- Achieving improvement in labour efficiency, for example, replacing tail painting and observation.
- Finding cows that wouldn't have been picked on heat — especially when less experienced staff were involved.
- Replacing the need for synchrony programs and reducing prostaglandin use.
- Reducing the number of bulls running with the herd (as a workplace health and safety issue).
- Generating vet-check lists (eg non-cyclers and cows with short returns).
- Generating pregnancy test lists.
- Picking up early abortions.
- Better timing of insemination and increased confidence in using sexed semen.

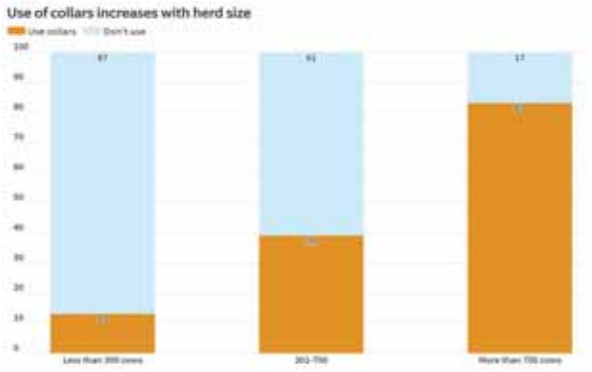
Overall, farmers are highly satisfied with activity meters. Some 90pc of farmers using collars in NSW said they had made a significant contribution to their farm business. Some 20pc said the collars were not "doing everything we want them to". These were mostly older-style collars purchased more than five years ago.

Advice to other farmers

Those involved in the project provided some tips to farmers thinking about using it.

Firstly, think about the likely **payback period** for the investment. The costs typically range from $150-$250 per collar depending on what's switched on (ear tags are cheaper) and $5 to $15,000 for associated hardware and set-up. Likely returns will depend on what the farmer wants the activity meters to do and how much improvement/efficiency they can offer in a herd. Tips/traps: Every farm is different — "for us the big value was having a way to get off farm".

Before buying, decide the **amount of integration** with other tech that is wanted. Will the products under consideration synch with the drafting gates and herd management software on the farm? Does this matter — some farms don't mind (too much) about multiple entry of cow data, others hate it. Activity meters that integrate with herd management software will automatically harvest data for herd level reports and actions. Tips/traps:



Deciding where the information needs to be be available, for example on a phone, is important.

"don't buy on a promise" — the farmer has to be comfortable with the capacity for data synching that is available at the time that they purchase. More data integration may happen later, but it might not. If it's essential, make it a condition of purchase.

Decide **where the information needs to be able to be seen** and who will use it. Will the information be displayed where it is needed, for example on a phone app, at the dairy, where cows are examined or just in the farm office? Will staff be able to see it? Is it easy to read? Tips/traps: "Workers will need to see and understand the outputs if you want them to use them".

Consider the **level of support** needed. What is the warranty? Is there a product plan that includes technical backup? Most of the software support can be done quickly by remote access if the supplier or distributor provides that service. Tips/traps: Check that repairs to the system can be done quickly (within 1-2 days) if relying on activity meters for heat detection.

Work with the person installing the gear to get the **best signal coverage**. The locations of the base and antennae are important. Topography of the farm makes a difference, with hills more of a challenge. Repeaters can be set up to extend the distance that signals can be read so there is more timely information and groups of cows or heifers that are not coming to the dairy can still be monitored. Expect to do some adjustments to get it right. For example some other equipment, especially bluetooth devices, can interfere with function. **Tips/traps:** Extraneous signals can occur from collars that are not in use — store transponders in a metal cupboard to avoid this.

Decide whether or not **collars will be moved between cows**. Some farms choose to put a collar on each cow and leave it on. Others swap collars from in-calf cows to fresh cows. Shifting collars reduces the total number to purchase but adds to workload and means the opportunity for information about the cow in the time it is not wearing a collar is lost. **Tips/traps:** each cow needs to wear a collar for 7-10 days for its data generated to be reliable, so ensure there is enough time between fitting a collar and wanting to use it.

Have good facilities and **a specific protocol for fitting (and removing) collars**. Cows are strong in the neck and heads are hard. Collars need fitting at the correct location and tightness. **Tips/traps:** "Someone's hand getting broken is a real WH&S risk if you don't make sure staff get the process right and stick to it".

Be prepared to spend a few weeks getting used to the new system — then shift over. Most farms find they keep on doing their usual heat detection for a few weeks to become comfortable with the new system and confident that the activity meters are picking up the cows they see on heat.**Tips/traps:** "Don't get into the trap of keeping your old heat detection system going once you can see that the collars are working — keep an eye out, but trust them". And always keep a good visual ID system. D

The TechKISS project is supported by the NSW Dairy Industry Fund. For more info contact Pauline Brightling (pauline@harrisparkgroup.com.au or 0418 336 211).

Acknowledgement: The DataGene HerdData app was developed by DataGene, a dairy industry initiative that receives the majority of its funding from Dairy Australia through the Dairy Services Levy, and the Australian herd recording sector. ©2018 DataGene Pty Ltd.

Semex offers high health trait sires

THE Semex lineup in the April was again fortified by sires with high ratings on the Australian, United States or Canadian systems as well as the Immunity+ sires Australian producers need to breed healthier, longer-lasting herds.

Semex knows its clients are facing surmounting pressure economically to reduce costs and socially to reduce antibiotic use. Semex offers the best solution to help crush disease with its strong lineup of Immunity+ sires.

A popular Genomax sire in Australia, 0200HO10411 Claynook Dealmaker, a Unix x EX-90 6 Hunter x EX-92 27 Planet, has high figures under the Canadian Lifetime Profit Index (LPI): 6.9 per cent Sire Calving Ease (SCE), +12 Mammary System; +12 Median Suspensory; +10 Fore Attach; +14 Rear Udder Height; +9 Rear Udder Width; +105 Herd Life, +105 Somatic Cell Score, +104 Mastitis Resistance and +106 Milking Temperament.

0200HO10383 Ladys-Manor Luxus (President x Mogul x Super) graduates with great figures under the United States system. Under that system it has +2.33 Predicted Transmitting for

0200HO10777 Westcoast Perseus is a Genomax and A2A2 sire.

Type and +2.17 Udder Composite Index with exceptional +67 Fat pounds, +0.16pc Fat and a +4.1 Productive Life and +1.8 Daughter Pregnancy Rate.

0200JE00183 Sunset Canyon David is a high reliability sire, and remains number one on the Australian system's Balanced Performance Index Jersey list at +265 with impressive +114 Survival, +104 Milking Speed, +105 Temperament and +108 Likeability. It is only available as a Semexx gender sorted sire.

0200HO10366 Benner Bardo is the new number two LPI proven sire in Canada, and is backed by an impressive and well-known cow family. Bardo will sire daughters that are high level fat producers, being ideal for Daughter Fertility +104, Milking Speed +103 and Temperament +105.

0200HO10777 Westcoast Perseus, a Genomax and A2A2 sire, is a Penmanship from a VG-88-3YR Doorman. Next dam is a VG-87 Robust that traces back to the Pine-Tree Martha Sheen family that has been worked with extensively around the world and made numerous influential sires and donor females. Perseus will excel as an extreme calving ease sire, A2A2 designation and as a high ranking BPI sire at +375 with +103 Overall Type, +106 Mammary System and +105 Calving Ease.

0200HO11242 Progenesis Pavarotti, from the Progenesis program, is a Genomax, RobotReady and A2A2 sire and offers a solid US Genomic Total Performance Index proof. Sired by Frazzled, it is from a VG Silver from Progenesis Enforcer Pat.

Article supplied by Semex, website <www.semex.com.au>.

Viking focus on health and production

IS breeding for both healthy cows and high production possible? The answer is yes. In the Nordic countries, dairy farmers understand breeding is a crucial part of ensuring a successful dairy business, and that as a management tool, it is just as important as finance, feeding and management.

A natural defence against diseases in the genes is at the heart of the Scandinavian philosophy, driven by the fact that they have had strict veterinary regulations for more than 30 years regarding the use of antibiotics.

In Scandinavia, antibiotics are forbidden to be used as growth promotants or for the prevention against diseases in food-producing animals.

In Australia, efforts to reduce the use of antimicrobials are being driven by the National Antimicrobial resistant strategy 2015-2019.

The dairy industry in the Nordic countries has been compelled to find other ways of keeping cows healthy and highly productive. Therefore, these countries have a lot of experience in this field and a suitable solution for dairy farmers in Australia.

The Nordic tradition in breeding for

Australian dairy farmers can benefit from the strong health traits in Viking Genetics animals.

healthy cows is reflected in the latest report from the European Medicines Agency (EMA), from 2016, *Sales of veterinary antimicrobial agents in 29 European countries in 2014*. According to this report, Sweden, Finland and Denmark are the European Union member states with the lowest use of antibiotics in livestock, with an outstanding leading position.

Scandinavian farmers also have the highest milk yield per cow, according to the International Committee for Animal Recording (ICAR). Sweden has an average of 9740kg per 305-day lactation, Denmark 9705kg and Finland 9542.

What is the "secret" behind the success of Nordic dairy farming?

The answer is simple and straightforward: good management and excellent genetics. The Nordic Total Merit (NTM) index, where all traits are of economic importance, has 90 sub traits combined into 14 main traits. The weightings are distributed with 50 per cent for health and fertility traits, 30pc for production and 20pc for conformation.

Viking Genetics has more than 40 years of experience in breeding for health.

The information on health traits is based on veterinary registrations from more than 80 diagnoses, which have been recorded since 1987. Registrations of mastitis resistance started in 1982, hoof health data collection started in 2003; while data collection for the young stock survival index started in the 1990s. Reliable registrations makes reliable breeding values.

Article supplied by Viking Genetics, website <www.vikinggenetics.com>.

Making better cows, faster

IN less than a decade reliable genomics has increased the pace of genetic gain in Australian dairy herds and simultaneously reduced the cost of elite genetics.

"Genetic improvement is the single most important factor in dairy profitability at the moment," ABS national sales manager Paul Quinlan said. "Despite dry conditions and feed shortages, which are increasing costs, those who are investing wisely in elite genetics are seeing permanent and cumulative improvements in their business."

Genomic reliability has made breeding decisions measurable before use. Genetic advancement plans are readily available through ABS.

Under the Australian Breeding Values (ABVs) system Australian dairy farmers can choose the best genetics from around the world.

Using the ABS Genetic Management System (GMS) and <www.absglobal.com/au/dairy/genetic-services/genetic-audit> dairy farmers can choose both elite genomic sires and reliable Australian proven sires.

"Making the correct decision is so important," Mr Quinlan said. "GMS removes the guesswork and makes it easy to customise breeding plans that demonstrate the desired outcomes in an easily understood and transparent form.

"At ABS we want to make better cows, faster. It's not as complicated as some might think. Australian dairy farmers have more choices than ever before when selecting an elite team of sires to advance genetic gains."

ABS national sales manager Paul Quinlan says genetic improvement is the single most important factor in dairy profitability.

While acknowledging that to many dairy farmers conformation was important, Mr Quinlan said it should not take precedence over breeding profitable cows.

"It's important to aim for a balance of health, production and conformation," he said. "We want to help Australian dairy farmers breed happy, healthy cows and we are doing just that by making available some of the best genetics Australia has ever seen."

ABS has selected sires that will make healthy cows for the Australian farming system. This has never been more evident than the choices customers made in 2018 when adding 29HO16888 Seagull-Bay MVP into their breeding program as it now excels in Farmer Likeability ABV at 107.

"With the equivalent of more than 160 cows bred to MVP in Australia every day last year, he is proving to be today's 'sire of choice' matching other farmer favourites such as Goldbullion, Shottle and Medallion," Mr Quinlan said.

MVP's farmer satisfaction and proven proof reliability is unmatched in the top 15 proven sires. With more than 1000 milking daughters and carrying the A2A2 characteristic, its outstanding udders and conformation will have a long-term influence on the Australian national herd.

29HO17747 Cookiecutter Harper, a Balisto son, currently leads the elite group of multi-country proven sires in Australia at 397 Balance Performance Index (BPI).

In this proof run ABS has added several elite genomic sires to the BPI list. "It's so exciting to add additional elite sires each proof run," Mr Quinlan said.

These elite sires, which are all measured under the Australian BPI index system, are available because of ABS's genomic strategy and the meticulous selection of genetics from around the world. D

Article supplied by ABS Australia, phone 1800 227 285, website <www.absglobal.com/au>.

Reds enjoy surge in popularity

THE Australian Red Dairy Breed is enjoying a surge of popularity off the back of its strong health characteristics and the cattle's ability to out-perform herd mates during drought conditions, according to a director of the breed society.

NSW Aussie Red breeder and Australian Red Dairy Breed director Sam Graham said interest in the breed had increased dramatically in recent years, particularly with rising grain prices, forcing farmers to feed their cattle more efficiently.

The ability of the Australian Red cows to hold condition during dry periods, while continuing to produce milk profitably and go back in calf is being reported time and time again.

Last financial year semen sales of Aussie Reds increased from 58,512 to 67,151 straws, according to the National Herd Improvement Association of Australia annual semen market survey.

Toby Leppin's farm is one of the most profitable year after year.

Mr Graham said the steady increase of demand for Aussie red semen and dairy cattle in the past 10 years was a testament to farmers seeking the economic benefits of profitable cows with good health traits, for example, good in-calf rates, low cell counts, longevity and good feet and legs.

Aussie Reds are the third-largest dairy breed — by population — in Australia.

The breed hosted an annual general meeting in Gippsland in January, which also included farm tours of local breeders. Farm business adviser Matt Harms was at Toby, Lynn and Nick Leppin's farm, and showed the attendees on-farm data how a highly ranked Balanced Performance Index herd with well-bred Aussie Red cows were among the top of the industry in terms of profitability, year after year.

He demonstrated this by comparing the financial and physical metrics with Dairy Base data, which includes Victorian Dairy Farm Monitor data. D

Article supplied by Australian Red Dairy Breed, website <aussiereds.com.au>.

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The 2018 Victorian Winter Fair senior supreme champion Cairnsdale Sid Anastasia with owner John Gardiner, Avonlea Holsteins, and his children Luke and Amy.

Winter Fair a chance to lift spirits

Key points
- ✔ What: Victorian Winter Fair
- ✔ Where: Bendigo, Vic
- ✔ When: July 2-4, 2019

By **Carlene Dowie**

THE organisers of the Victorian Winter Fair are encouraging farmers to get involved in the event as a way to help lift their spirits in the face of the past tough 12 months.

Clare Modra acknowledged that the dry conditions and difficult season faced, in particular, by northern Victorian farmers would have an impact on the event.

"It is hard to say the extent of that at this stage," she said. "A lot can change between now and July — if we get a lot of rain or milk price could easily lift morale."

'We are encouraging more people to go into the junior judging competition because it is so important for the kids to understand what makes a good cow.'

But she urged farmers to think about getting involved or planning a day out at the event as one way of helping to manage.

"It is just great for your mental health to just get off farm, get away from it all for a day or two, and you realise you are not the only one, everyone is in the same situation, it can help lift your spirits," she said.

Entry is free to the event, which will be held at the exhibition centre at the Prince of Wales Showgrounds at Bendigo, Vic, from Tuesday, July 2, to Thursday, July 4.

Mrs Modra said only a couple of minor changes were planned for this year's event.

A new award for young people will be given, with points awarded from the junior handlers' and junior judging competitions. Both competitions will still be judged separately with the same classes and awards but a new overall winner will be awarded. ▶

The Victorian Winter Fair always attracts a large numbers of entrants for the junior handler classes.

The overall winner will receive a clipping frame donated by Belrue Farms.

"We are encouraging more people to go into the junior judging competition because it is so important for the kids to understand what makes a good cow," Mrs Modra said.

The other change is that no sale will be held — either in the traditional format or the silent auction format organisers had trialled last year.

The event might see some more changes in future years inspired by Mrs Modra's visit to the World Dairy Expo at Madison, Wisconsin, United States, last year.

Mrs Modra was able to attend the event after being awarded the Power of Women scholarship at International Dairy Week.

The World Dairy Expo was pretty amazing.

"The sheer size of it is just phenomenal," she said. "It just shows you how isolated our industry is over here and how spoiled they are over there."

But the cows were not as good as

Judges for Victorian Winter Fair

MATT Templeton is the chief judge and Jo Holloway is the associate judge for the Victorian Winter Fair for 2019.

Event organiser Clare Modra said Mr Templeton was well known and well respected throughout the Australian show scene.

"We thought it was about time to showcase the talent in Australia," she said. "He is just every bit as good as the top judges we've had in the past from overseas."

Mr Templeton along with his parents Bruce and Jan and wife Nicola operates View Fort Holsteins at Tarwin, Victoria, where they milk 250 cows and farm 215 hectares. With a strong emphasis on cow families, the herd consists of many influential Australian and international bloodlines, which are being continually developed.

For 13 years, Mr Templeton worked as a professional cattle fitter. This work has taken him across Australia, New Zealand, United States, Canada, Brazil and Germany — where he has had the privilege of preparing some of the highest profile cows in the world including World Dairy Expo Supreme Champions.

He also spent many years working with the Budjon Show String at Madison, Wisconsin, United States.

Returning closer to home, Mr Templeton recently held the position of herd manager for Pooley Bridge Holsteins, Leslie Farms. Over the years Mr Templeton has shown and owned numerous All Australian and grand champions across the country, including two International Dairy Week Supreme Champions: Avonlea Robthom Connie Ex93 and Fairvale Morty Lady Ex97.

In 2016 Mr Templeton was the associate judge for the Red and White Holstein Show at World Dairy Expo. Je is also accredited on the Holstein USA judges panel.

Chief judge Matt Templeton.

Associate judge Jo Holloway.

Mr Templeton has judged at shows in all states of Australia and New Zealand including judging the National All Breeds Youth Show at International Dairy Week and Adelaide, Brisbane and Melbourne Royal shows and Waikato Show. He has judged On-farm Challenges throughout Australia including the overall final for the Holstein Semex On-Farm and the Leading Edge On-Farm Challenge.

Associate judge Jo Holloway has recently qualified for the Holstein Australia judges' panel. "From all reports he was pretty impressive, he's been around cows his whole life and is keen to do more judging and go down that path and we are always happy to encourage that," Mrs Modra said.

Mr Holloway grew up on the family farm at Allansford, Victoria, milking 550 cows with 75 per cent of the herd registered under the Gillear and Jolloway prefix.

The family purchased their first stud cattle at IDW in 2010 with two Talent daughters from Pooley Bridge Encore Elegance.

Since he and his brother Ben have purchased embryos and animals from many families in Australia and overseas including Lavangaurd Sue, Queen family, Barbie family, Gypsy Grand, Asia, Mystique Amilie and Melody.

In 2012 Mr Holloway started working with Semex in northern Victoria, now having a sales and national keys accounts and solutions management role.

The Victorian Winter Fair always attracts a large numbers of entrants for the junior handler classes.

she had expected them to be — although obviously at the top end, there were a lot more cows.

The number of trade stalls was also impressive. "Everything you can think of, they've got it, and so many different versions of it, and all competing against one another," she said.

The one thing they were particularly impressed with was the spectacle made of the champion cow. "Though that had its faults as the bloke doing the lighting didn't know the breeds, so the winning champion didn't get the spotlight," she said.

Although she said Australia and the Victorian Winter Fair didn't have the facilities to do it in exactly the same way, the organisers were thinking about ways they might be able to do more with the championship presentation.

Contact: Clare Modra, phone (03) 5487 1127, mobile 0419 200 981, email <victorianwinterfair@gmail.com>.

A unique feature of the Victorian Winter Fair is an award presented to the top Balanced Performance Index cow in the show. Peter Williams, DataGene, presents handler Cameron Yarnold with the award last year, which went to Mario Park Sid Alicia Ex-92-2.

Schedule of events

Tuesday, July 2
12 pm, Junior Judging Competition
Wednesday, July 3
10 am, Dry Heifer Judging
Thursday, July 4
10am, In Milk Judging (Intermediate Section)
1.30pm, In Milk Judging (Senior Section)

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Finding a veal market for male calves

Key points

- ✔ Small dairy operation uses milk to feed male calves
- ✔ Selling at 100kg as white veal
- ✔ Opportunity to get higher value return for milk

By **Elizabeth Anderson**

A SOUTH Australian dairy farm has found a way to find extra value in their milk by using it to produce veal.

Father and son Neville and James Krieg, Kangaroo Flat, SA, use all the milk produced on-farm from their Jersey herd to feed Holstein bull calves, which are then sold as white veal.

The idea began about seven years ago, when they began reintroducing dairy back onto the farm.

Neville had grown up with a dairy stud but his career initially led him off-farm, so they sold all the cows in 1990.

As James got older, he wanted to have a cow on the property, so they were able to buy a house cow from the family's original Skyvale Jersey bloodlines.

Family history played a large part in their decision to milk Jersey cows.

They have sourced the bloodlines from the original Skyvale Jerseys, run by James's grandfather Theodore Krieg, and restarted the stud.

James said there was something special about knowing his grandfather ran Jerseys and he was milking some of the same bloodlines. But he also believed the extra creaminess of Jersey fat did contribute to the end product of white veal.

The desire for good animals was also behind the decision to operate a registered stud. "When I get up in the morning, I want to look at and work with something that looks nice, so we like to breed good genetics," James said.

They milk twice a day on an old walk-through dairy, recommissioned after about 20 years of inactivity. They run two Jersey bulls, one bought and one home-bred, with the better cows joined through artificial insemination.

"We decided we needed to do something with the milk, so we thought why not have Jersey cows and get more calves," James said. "The idea grew from there."

They source the bull calves from three local Holstein producers, buying them in at one to two weeks old, generally keeping them until they are about four months old. The calves are fed a predominantly milk diet, supplemented by some hay.

The calves are grown to about 195 kilograms liveweight, which ends up about 100-kilogram dressweight.

The calves are killed at Kapunda, SA, and sold directly to Bruce's Meats, Mitcham, SA.

James said they had also been in discussions with a chef at a Barossa Valley restaurant about future opportunities.

They turn off two calves every fortnight, but are looking to expand that further.

James said they had grown slowly to this point, but he believes they were at the point where expansion could speed up.

"We had to try and first figure out whether there was a market for the product," Neville said. "We had to produce enough of the product to see if people would like it."

James said it took some trial and error to work out the best way to grow the calves and to get the best end product.

Neville said the product worked in with their values of creating a sustainable product. He said a bobby calf would fetch little returns before they add value to it.

They use straw to line the calf pens, which then becomes mulch for their own paddocks or is sold.

They grow all feed on the farm, growing cereals such as wheat, barley and some canola, as well as medic, ryegrass and oats for grain and silage on their 60-hectare farm.

As they work to build numbers, to meet the demand for milk, they have been keeping all heifers within the Jersey herd and have grown to 22 milkers. Calves that grow beyond butcher weight are kept on-farm and then sold directly to consumers, as white veal, in quarters.

Neville said they worked out a budget for their end product, which includes a milk price of 50 cents a litre.

"I think most dairy farmers would be happy with that," he said. D

James and Neville Krieg, Skyvale Jerseys, Kangaroo Flat, SA, in their herd of Jersey milkers.

James Krieg with some of the four-month-old Holstein bull calves.

A Jersey heifer calf on the Krieg farm. As the family builds numbers, the Jersey calves are retained to be part of the herd.

Younger Holstein bull calves.

Get the basics of calf rearing right

Key points

- ✔ Basic biological principles guide calf-rearing best practice
- ✔ Feed adequate quantity of clean colostrum quickly
- ✔ Restricting milk intake restricts growth and long-term milk production

By **Jeanette Fisher***

IN the past 12 or 18 months, following a calf-rearing site on social media has highlighted to me just how slowly best practice information filters through to some of the people working with calves. This backs up what I see in my business where well-intentioned farmers just don't know some of the key points of successful calf raising.

Somehow calf rearing still seems to be the aspect of dairying that gets the least attention. The importance of good calf management is possibly overlooked because of the two-year lag between financial inputs and return on investment.

There are few benchmarks that allow farmers to tell whether or not they are doing a good job with calves; survival of most of the calves is often considered a good result.

Another factor slowing the uptake of best practice information is the fact that it can be hard for farmers to quantify, in their own herds, the benefits of improved management practices such as colostrum management, increased milk feeding rates, measuring or achieving certain parameters, etc.

This means that sometimes one just has to believe the best practice recommendations, which are based, in many instances, on research work done in commercial dairy situations, often as part of long-term longitudinal studies. Yes, best practice recommendations change; yes, research is often conducted in America or Europe, not Australia; yes, there are differences of opinion between scientists and yes, not every recommendation is going to fit every farm but the reality is that the same basic biological principles apply to every calf, no matter where they are born or their breed. Ignoring these basic biological principles will attract the penalties of high death rates, high sickness rates, poor growth rates and poor production figures in replacement calves/heifers.

Calves fed ad lib milk have excellent body condition and show no evidence of scouring. Picture courtesy Meadridge Farms

'Ignoring these basic biological principles will attract the penalties of high death rates, high sickness rates, poor growth rates and poor production figures in replacement calves/heifers.'

The basic biological principles, which should not be ignored, and simplified management practices to mitigate those risks are:

1. Navels in newborn calves are an ideal conduit for bacteria to enter the body, where they can multiply and cause disease and/or death.

Prevention of navel infection includes keeping calving areas as clean as possible, cleaning calf trailers and dipping navels in a strong iodine solution as soon as possible after birth and again at around 12 hours.

2. Colostrum quality in the cow begins to decline as soon as it gives birth (or before if it is leaking milk).

Milking freshly calved cows as soon as possible after calving will give the best quality colostrum.

3. A high percentage of calves left to suckle their dams will not gain enough antibodies to give adequate passive transfer.

Tube or bottle feeding good quality colostrum will give a much higher percentage of calves with adequate passive transfer.

4. The calf's ability to absorb antibodies from colostrum starts to decline virtually as soon as the calf is born. Delaying colostrum intake will result in a calf with failure of passive transfer, i.e. inadequate antibodies to protect against disease.

Tube feeding or allowing a calf to drink at least 10 per cent of its bodyweight in colostrum as early in life as possible will enhance the calf's chances of remaining healthy.

5. Not all colostrum contains enough antibodies to provide adequate passive transfer levels.

Using a Brix refractometer is an easy way to measure each cow's colostrum to ensure that only the best colostrum can be identified for first feeding; readings of greater than 22pc Brix indicate good quality colostrum.

6. Fresh colostrum is an ideal breeding medium for bacteria. Improper cleaning or direct contamination of test buckets will inoculate warm colostrum with enough bacteria to cause illness or death in calves, especially if it is not fed immediately.

Ensure colostrum is collected and stored in containers that have been scrubbed and disinfected. Rapid chilling is also imperative.

7. Calves with poor passive transfer suffer ongoing negative effects, including reduced health status, increased death rates, lower growth rates, delayed calving and decreased milk production when compared with calves with acceptable passive transfer.

Measuring passive transfer levels in calves provides an accurate assessment of the success or failure of a colostrum program. These are easily measurable, either on farm or by a vet and results can be used to adjust management practices to achieve a high percentage of calves with acceptable passive transfer rates.

8. Restricting milk feeding rates to 10-12pc (4-4.8 litres/40 kilogram calf) of bodyweight restricts growth, including the development of the immune system. Slow growing calves are at much greater risk of illness or death than well-fed calves. In calves that grow slowly in the first eight weeks of life, chemical and hormonal "switches" are not triggered, which prevents these calves from producing as much milk as those which are fully fed.

Feeding at 18-20pc (7.2-8 litres/40kg calf) of bodyweight or ad-lib will produce healthy calves with high production figures when they enter the dairy. To feed at these high rates requires attention to detail when cleaning milk-feeding equipment so that milk is not contaminated before it is fed.

9. High growth rates in the first eight weeks of life must come from milk; forcing calves to eat grain early will not achieve the desired hormonal changes. High early growth rates have more economic benefit than early weaning; calves will eat grain when the time is right, no matter how much milk they are getting, so do not force replacement heifer calves to eat grain by depriving them of milk.

10. Rumen development is not stimulated by the scratch factor. Hay and straw are not beneficial in pre-weaned rumen development; post-weaning, high-quality forage should be added into the diet in a controlled way.

The nutritional factors which contribute to good rumen development in pre-weaned calves are volatile fatty acids, which come from the breakdown of grains.

Consumption of more than 1kg/day/calf of a good-quality, coarse calf muesli or pellet will occur when a calf has sufficient rumen development to allow it to be weaned without suffering a slump in growth rates.

Sometimes fitting management changes into daily operations can be a challenge but the benefits, both financial and animal health and welfare, are well worth the effort. There is much more to calf rearing than just these pointers, but hopefully these will help clarify some of the factors that have such a great impact on calf health and survival. D

***Jeanette Fisher is the principal of HeiferMax, email <jfisher@heifermax.com.au>, website <www.heifermax.com.au>.**

Feeding at 18-20pc (7.2-8 litres/40kg calf) of bodyweight or ad-lib will produce healthy calves with high production figures when they enter the dairy. Picture courtesy Meadridge Farms

Farm switches to rice hull bedding

Key points

- ✔ Rice hulls now used in place of sawdust
- ✔ Specific shed and paddock used for calf rearing
- ✔ Calves fed milk twice a day

By **Jeanette Severs**

THE shed and paddocks used to rear calves on Leo and Trish van den Broek's dairy farm at Tinamba, Vic, are specific purpose.

The calves are housed in an open-fronted shed divided into 3-metre by 3m compartments, each capable of comfortably holding five calves.

Dairy Australia in its *Rearing Healthy Calves* booklet recommends using a dedicated area for calf housing that allows sunlight and fresh air to do much of the work reducing pathogens between calving periods. Segregation is also recommended, between breeds, ages and classes of calves. In preparation for housing calves, Mr van den Broek spreads disinfectant on the earth floor before covering it with bedding material. He used to use Hydrolime over the floor but in recent years has used Stalosan powder.

After many years using sawdust as bedding material, for the past two calving seasons he has laid down crushed rice hulls. Mr van den Broek said he would continue to use crushed rice hulls as bedding material. He uses a tractor and bucket to spread the bedding 15 centimetres deep in each compartment.

"The calves stay in the pens for a week," Mr van den Broek said. "After that, they go into a paddock behind the shed."

After the group of five calves exits the pen, the rice hulls are taken out and composted.

"I used sawdust for a long time but it was so sticky and was a chore to clean up," he said. "And when you get sawdust delivered, you have to get a trailer-load and if you don't use it, it's sitting outside and can get wet. So I had to fill all the calf pens with it, whether I was using them or not.

"The rice hulls are compressed in a bag and are easy for me to work with. I only have to ready one pen at a time, and the bedding stays quite fluffy in the pen and don't clump. We haven't had problems with calves inhaling the particles.

"But it's horses for courses."

Leo van den Broek in his calf-rearing facility.

Dairy Australia recommends that farmers ensure bedding material is absorbent and drains well, so calves are not laying in manure or urine nor able to inhale pathogens when they nibble on their bedding. Biosecurity guidelines require the used bedding be managed in the same way as effluent manure. The used bedding should not be spread on the pasture in calf paddocks, so pathogens are not spread to calves when they graze. Farmers also need to ensure the 21-day withholding period is respected after the used bedding is spread on pastures grazed by cows.

'The rice hulls are compressed in a bag and are easy for me to work with.'

The van den Broeks milk a spring-calving herd of 125 cows off 38.5 irrigated hectares at Tinamba. They grow out self-replacing heifers to point-of-calving and run dry cows on two other blocks, at Boisdale, Vic, and Newry, Vic. The 40ha Boisdale farm grows perennial ryegrass and clover pasture, under flood irrigation, for grazing and harvest.

The van den Broeks use artificial insemination across the herd for six weeks, using Holstein semen for the Friesian and Friesian-cross cows and Jersey semen for the full Jerseys and all the heifers. "Then we use mop-up dairy bulls for six weeks, sticking with a Jersey bull for the heifers," Mr van den Broek said. "The past two seasons, I've used a mop-up Hereford bull for the cows.

"I rear every AI Friesian-Holstein heifer calf."

Calves grazing in the calf paddock.

Raising calves

Mr van den Broek prepares the calf shed, knowing that joining took place from November 1.

At 10 days pre-calving, dry cows and heifers are moved to the dairy farm and fed a lead feed. Every calf is left on the cow long enough to receive colostrum.

"If they calve in the morning, the cow comes in for the evening milking," Mr van den Broek said. "If they calve at lunchtime or later, the cow comes into the dairy the next morning.

"I save all the colostrum milk and it goes to the calves. I milk the fresh cows separately and their first milk goes to their own calves."

Mr van den Broek said all fresh cows were milked into a test bucket. "That milk goes to the calves, fresh every ▶

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1 From Nussio et al., 2002. Scientia Agricola, 59, 3: 421 | 2 The effect of ionophores on feed intake by feedlot cattle, 1995, Gary Vogel, Lilly Research Laboratories, Canyon Texas
3 Stromberg et al 1982 Am J Vet Res. 43:583 | 4 Watkins et al, 1986 AgriPractice. 7:18-20

◀ day," he said. "Each calf gets their own mother's milk for the first drink in the shed. It's something I've always done and, while there's probably no real reason for doing it, it makes me feel good. It can't hurt, anyway."

Mrs van den Broek takes responsibility for teaching the calves to drink and looking after their welfare. While in the pen, the calves receive milk twice a day.

"Trish does a good job raising the calves," Mr van den Broek said. "We don't do anything different, we just try to do basic things well. "

Dairy Australia recommends calves reared in paddocks have access to shelter from extreme weather conditions, either constructed or tree lines and dense vegetation. The van den Broeks put the calves in a paddock sheltered by willow trees and buildings.

In the sheltered calf paddock, milk is provided once a day, after the night milking; and the calves have adlib access to pasture, water and to eat Reid Stockfeed's crushed grain calf rearer, given after the morning milking.

"The grain mix is 21 per cent protein and has lucerne in it; and if we get a shower of rain, the calves will still eat it," Mr van den Broek said. "This paddock has the best pasture and only the calves are allowed into it."

Weaning begins towards the end of October. Calves receive their first 7-in-1 vaccination, Piliguard, worm treatment and the first of three back drenches. By the end of October, all calves are weaned. They are then moved into another paddock, where they remain until they are about seven months old, when they are moved to Boisdale.

"By 6-7-months-old, they're eating dairy pellets and have been grazing on the best annual pastures, so they've been getting plenty of protein," Mr van den Broek said. "I also make millet silage and feed that to them."

While he does not keep bull calves, they receive the same treatment as the heifers, but in a separate enclosure. These calves are sold at the week-old stage. "They get crushed rice hulls for their bedding in a separate shed," Mr van den Broek said. "They get their mother's colostrum and milk for their first feed. Then they get the fresh cow milk for the first eight days."

These calves are ear tagged and sold directly from the farm to a regular client.

"They're a byproduct of calving, but they still need to be looked after," Mr van den Broek said. D

Options for calf bedding

DAIRY Australia's *Rearing Healthy Calves* contains clear guidelines about ensuring calving environments are clean, observable, drained and sheltered.

The reasoning is to increase the likelihood of a safe and successful calving, as well as ensuring the newborn calf has reduced exposure to disease. Calving paddocks should also be out of the grazing rotation to avoid manure contamination.

Management should ensure that cows due within seven-to-10 days are brought to these paddocks, close to shelter, with easy access to water.

DA's guidelines recommend allowing 1.5-2 square metres of space per calf in the pen and that similar-sized calves should be housed together. This improves disease control and reduces competition for food.

Bark chips, rice hulls, straw, hay, sand, wood shavings and sawdust are considered as options for bedding (see Table 1).

Table 1: Calf bedding options

Options	Notes
Bark chips	Wood chips, tan bark and post peelings are absorbent bedding materials with good insulating properties and low palatability to calves.
Rice hulls	Rice hulls are absorbent with good insulation properties. Note that the use of rice hulls is sometimes associated with high incidence of mouth ulceration and small cheek abscesses.
Straw/hay	Using straw or hay as bedding should be avoided when it is also supplied as a fibre. Calves may consume contaminated bedding and increase their exposure to pathogens.
Wood shavings Sawdust	Fine particle sawdust will compact more and is less suitable than larger wood shavings. Treated wood/pine shavings or sawdust should not be used as these could be toxic if consumed.
Sand	Sand does not provide any insulating properties and can accumulate in the stomach of calves if eaten. It is not recommended.

According to research from the United States, bedding can have an influence on the growth performance, as well as the health of dairy calves. The study at the Department of Animal Science at the University of Arkansas in 2002[1] compared fine granite, sand, rice hulls, wheat straw and wood shavings as bedding for 60 female dairy calves. Comfort, the risk of contracting disease and reducing stress were factors in the research.

The 60 calves (comprising 58 Holstein, one Brown Swiss and one Guernsey-Holstein-cross) were housed for six weeks without removing bedding material from the pens. Growth rate and feed efficiency were not affected by different bedding materials.

Of note was that calves housed on rice hulls and sand had greater self-grooming behaviour, although the tendency of the material to adhere to calves skin might account for that factor.

Sand tended to attract more faecal and other dirt, whereas rice hulls, straw and wood shavings stayed cleaner, probably because of the particle size of the bedding materials.

In this and a second trial[2], calves bedded with fine granite and sand had more fluid faeces and more medical treatments for scours.

Both studies found that ventilation of the calf-raising area was important for reducing bacterial infection.

Australian biosecurity guidelines require used bedding to be managed as effluent manure. It should not be spread on the pasture in calf paddocks to ensure pathogens are not spread to calves when they graze.

Farmers also need to ensure the 21-day withholding period is respected, after this used bedding is spread on pastures grazed by cows.

Footnotes

1. Growth Performance and Health of Dairy Calves Bedded with Different Types of Materials, R Panivivat, EB Kegley, JA Pennington, DW Kellogg and SL Krumpelman, Department of Animal Science, University of Arkansas, USA, 2004.

2 Comparisons of housing, bedding and cooling options for dairy calves, TM Hill, HG Bateman II, JM Aldrich and RL Schlotterbeck, *Journal of Dairy Science*, 94:4 (2011).

—Jeanette Severs

Right decisions create lifetime benefit

Key points

- ✔ Feed more milk in the first 30 days
- ✔ Look at what calves are being fed
- ✔ Consider introducing new technology

By **Elizabeth Anderson**

MAKING the right decisions when raising calves can have a big impact on the lifetime productivity of the cow, according to United States-based consultant Bob James. Dr James, Down Home Heifer Solutions and Virginia Tech Department of Dairy Science, was speaking at the DairySA Central Conference in March about setting a calf up for a lifetime of production by getting the basics right.

He said raising a calf could be a big investment, costing as much as $US2000 to get it to springer age. "We want to make sure those raised are able to reach their genetic potential," he said.

Dr James said this started as early as the colostrum feed. "You want it to be quick and clean," he said. "Every 20 minutes the bacteria count can double."

He said higher bacteria levels in the colostrum would lower the absorption of important antibodies.

Dr James said calving should occur in a clean environment with the fresh cow milked and the calf fed colostrum as soon as possible after calving.

He said there also needed to be more awareness of the benefits of 'transition' milk. "(The calves) are never going to perform as well as when they get first feeding and second and third feeding as well," he said.

US-based dairy consultant Bob James says taking the right step with the "babies" of the herd pays off in reduced sickness and increased productivity.

'We want to make sure those raised are able to reach their genetic potential.'

Dr James agreed this could be labour intensive but not putting in the time could mean dealing with a sick calf. "Screw this up and you're fighting the rest of the way in raising that calf, but get it right and life is good," he said.

Dr James said the next step was ensuring calves were being fed at a frequency and amount to allow for growth as well as some extra body condition.

He said calves needed to be fed at least twice a day. "Feeding a baby once a day — talk about a welfare issue," he said.

He said the quality of this liquid also needed to be considered – was it waste milk or milk replacements?

Dr James said feeding rations should consider environmental influences. A calf in a 22 degrees Celsius environment had the lowest maintenance needs but if the temperature got lower or higher, their energy requirements would increase.

In a 10 degree Celsius environment, a calf would need 3.3 litres of milk just to meet maintenance, before allowing for growth.

Dr James said despite the high detail needed, the system to feed calves needed to be simple.

"It sounds contrary to everything I'm saying, but you need to come up with a system that you are able to do, day after day," he said.

He said one option was an autofeeder, which would allow frequent access to smaller meals, but he acknowledged there was a cost issue with this technology.

Monitor the feed margin to lift profit

Key points

- Monitor feed margin regularly throughout season
- High feed margin needed to generate profit
- Look to compare performance with other farms

By **Frank Tyndall**

THERE is a constant, and important, debate in dairy farming around the "feed margin". I have just watched an argument on Twitter — a Friesian guy boasting that his cows were producing 2.5 kilograms of milk solids per cow per day, and another guy saying "big deal, Friesians need twice the food of a Jersey". In recent publications, a farmer milking once-per-day is 'doing well', while cows up north are producing 780kg MS per cow per year.

There are many statements made about milk, grain, and grass, in this magazine, at discussion groups, at focus farms, in local stores. These discussions often claim successful performance but without a robust analysis we can't really know who is making money.

High production, measured by MS/cow or MS/ha, does not necessarily make more money. It may be costing too much for the extra milk.

Likewise, reducing cost does not necessarily make more money. Cutting the feed costs may lose too much milk.

At its simplest level, farm performance is the amount of money left over, measured simply as "$ profit per farm". The farm must make a profit, or create a margin. And, of course, that profit must be sustainable, meaning, in the chase for money, the environment, the people, and the cows, are not negatively affected.

But how do farmers know if they are really making money, and more to the point, how do they know what to change to make more? The Profit and Loss statement in a tax return is not a great tool because it is designed to manage tax, and it comes way too late, just once per year. Data captured to do the GST arrives more often, but is often of limited value.

Having a pile of cash in the bank on any day is not necessarily a good assessment of money making, because the farm may have just sold a heap of choppers, and still have plenty of bills to pay. "End-of-year" analysis is far too late to fix things to ensure money is being made throughout the year.

To achieve profit, a lot of costs need to be kept under control: e.g. overheads (rates, repairs and maintenance, accountant, admin, etc), herd costs (health, breeding, mating), milking costs, rearing replacements, labour and debt.

But it is the "feed margin" that makes the fundamental contribution to farm profit. The feed margin is calculated by taking the costs of feed to produce milk (grown feed and purchased feed), from the income received for the milk.

The feed margin must be positive and large to have any hope of paying ▶

Macalister Demonstration Farm fortnight Feed Margin Report

1	FEED MARGIN PERFORMANCE	Last Year	One month ago	Ten Days Ago	Monthly Target	This Ten Days	Another Farm	Units
2	Ten days to date:	20/12/17	20/11/18	10/12/18	Dec 18	**20/12/18**	20/12/18	
3	Milker graze area	65	72	72	73	**72**	68	Ha
4	Milkers	320	326	320	340	**320**	300	Head
5	Stocking rate	4.9	4.5	4.4	4.7	**4.4**	4.4	cows/ha
6	Grazing allocation 1/	26	28	28		**28**	28	th of graze area
7	Average graze rest time	26	28	30		**30**	28	Days
8	mm irrigation/hectare/day	3.0	3.5	3.5		**3.5**	3.0	mm water/ha/day
9	Element Nitrogen	1.0	1.4	1.4		**1.4**	1.0	kg element/ha/day
10	Element Phosphorus	0.10	0.10	0.10		**0.10**	0.10	kg element/ha/day
11	Element Potassium	0.20	0.20	0.20		**0.20**	0.20	kg element/ha/day
12	Renovation	$0.25	$0.25	$0.25		**$0.25**	$0.20	$/ha/day
13	Topping	$0.00	$0.00	$0.30		**$0.30**	$0.10	$/ha/day
14	Estm'd grass consmp'n (inc cons'vd forage)	51	57	50	57	**50**	40	kg DM/ha/day
15	Grass consumed per cow	10.4	12.5	11.2	12.1	**11.2**	9.1	kg DM/cow/day
16	Grass growing spend	$4.13	$4.96	$5.26		**$5.26**	$4.18	$/ha/day
17	Estm'd grass price	$81	$87	$105		**$105**	$105	$/T DM
18	Conc (inc additives) fed/cow	5.9	5.4	5.9	4.5	**5.9**	4.5	kg DM/cow/day
19	Hay/silage supp fed/cow	0.0	0.0	0.0	0.0	**0.0**	0.0	kg DM/cow/day
20	Other supp fed/cow	0.0	0.0	0.0		**0.0**	0.0	kg DM/cow/day
21	Estim'd supp waste	3%	3%	3%		**3%**	3%	%
22	Conc (inc additives) avg price	$344	$580	$570		**$570**	$596	$/T DM
23	Purch hay/silage supp avg price							$/T DM
24	Other supp price							$/T DM
25	Feed Conversion Efficiency	103	112	107		**106**	98	kg MS/tonne DM
26	Total feed intake/cow	16.1	17.7	16.9	16.6	**16.9**	13.4	kg DM/cow/day
27	Energy density of diet	12.0	12.1	12.1		**12.0**	12.1	MJ ME/kg DM
28	Crude protein % of diet	17.7%	19.9%	18.4%		**18.0%**	19.1%	% CP
29	NDF Fibre in diet	32.1%	32.3%	32.2%		**32.6%**	32.9%	% NDF
30	Estm'd body condt'n change	0.00	-0.10	0.00		**0.00**	0.10	kg LWT/cow/day
31	Litres/cow	23.1	27.9	24.8	23.5	**24.3**	16.9	l/cow/day
32	Fat test	4.02%	3.83%	4.11%	3.93%	**4.19%**	4.49%	%
33	Protein test	3.26%	3.35%	3.30%	3.24%	**3.29%**	3.38%	%
34	Fat per cow	0.93	1.07	1.02	1.69	**1.02**	0.76	kg/cow/day
35	Protein per cow	0.75	0.94	0.82	4.50	**0.80**	0.57	kg/cow/day
36	Milk Solids per cow	1.68	2.00	1.84	1.69	**1.82**	1.33	kg/cow/day
37	Milk price (less levies)/kg MS	$5.51	$5.39	$5.34		**$5.32**	$5.29	$/kg MS
38	Milk price (less levies)/litre	$0.401	$0.387	$0.395		**$0.398**	$0.416	$ per litre
39	Fat return per cow	$3.76	$4.19	$4.00		**$4.00**	$2.98	$/cow/day
40	Protein return per cow	$6.10	$7.32	$6.41		**$6.27**	$4.48	$/cow/day
41	Volume charge per cow	$0.58	$0.70	$0.62		**$0.61**	$0.43	$/cow/day
42	Milk income/cow	$9.28	$10.81	$9.79		**$9.66**	$7.04	$/cow/day
43	All feed cost/cow	$2.87	$4.22	$4.52		**$4.52**	$3.63	$/cow/day
44	Margin or Income over all Feed/cow	$6.41	$6.60	$5.27	$5.88	**$5.14**	$3.41	$/cow/day
45	MOAF /ha /day	$31.55	$29.87	$23.44	$27.39	**$22.84**	$15.04	$/ha/day
46	Farm MOAF per DAY	$2,051	$2,151	$1,687	$1,999	**$1,644**	$1,023	$/day

◀ all the other costs. To know if the business is performing well, farmers need to be aware of their feed margin right now. The feed margin involves huge money and needs managing all the time in constantly changing circumstances, if the farmer is to maintain strong performance throughout the season.

True, it is a partial analysis of whole farm performance, and therefore not perfect, but no analysis is perfect. An assessment of the current feed margin, including the indicators that drive that feed margin, can pinpoint issues a farmer might be able to tweak to improve farm performance.

The Macalister Demonstration Farm is always looking for ways to report on the performance of the farm in such a way that others can get better value from the information published.

"Feeding your herd is such an important driver to making money that we are focusing on reporting on the feeding performance through the feed margin — that's the link between feeding costs and milk income," MDF chairman Neil Baker said.

"We acknowledge that it doesn't tell the full story of farm performance — that comes with the profit and loss statement at the end of the year.

'High production, measured by MS/cow or MS/ha, does not necessarily make more money.'

"But what we are looking for is a set of performance indicators that can be delivered every fortnight that help us analyse our feeding decisions and show us the impact they have on feeding profitability. That way we can respond to changes in feed margin and make necessary tweaks in an informed way. Of course, this relies on good quality data, collected regularly, so we can compare month to month and year to year."

The fortnightly MDF Feed Margin report (see page 69) is an example of a report that uses meaningful indicators to tell the MDF managers how they are going and lets them investigate how they might do better. It tells them:

- How they are performing now, compared to last fortnight, compared to this time last year, and how it is performing compared to another MID farm. (Look at the columns in the report.)
- What the main drivers, or inputs, that affect that feed margin performance are. (Look at the rows in the report.)

Let's break down the table on page 69 that appeared in the MDF report, on AusdairyL, just before Christmas 2018.

It looks like a lot of numbers but it's pretty simple it is worked through. Most farmer will have, or will be able to get, most of this information for their farm already.

Stocking rate

The stocking rate (line 5) is an important setting. Ideally it should be set with the aim of achieving a certain amount of grass per cow, but other non-feed issues (e.g. how many cows is the farmer prepared to milk and, in the longer term, are they growing cow numbers), make it difficult to exactly follow the grass per cow guideline to determine stocking rate.

Stocking rate is simply the number of cows in the herd in any reporting period, over the number of hectares of grazing area. The MDF stocking rate

is reasonably steady, making it easy for comparisons of farm performance through the year, and with previous years.

Grass

The block from row 6 to 17 tells the farmer about the grass: the grass-growing input quantities, the grass consumption per hectare, and an estimation of grass price, based on the cash cost of all the inputs (fertiliser, water, topping and renovation) to grow it.

The cost of irrigation water is made up of the cost of water used, and the water overhead costs, spread over the irrigation season.

Fertiliser costs are simply calculated as the number of kilograms spread at the cost per kilogram. Pasture renovation costs for the farm give a cost per hectare. Topping is an estimate, based on using a contractor.

Estimated grass consumption per hectare, probably the most important driver of margin, comes from the industry standard back-calculation.

All of this generates a price for the pasture consumed. Grass price is usually quite low, making it easy to get a margin from it. But, sometimes, when grass growing inputs quantities are high, and/or expensive, and not much grass is consumed, the grass price gets quite high. Grass price is rarely higher than concentrate price, but it does need watching.

Grass consumed per cow is a useful indicator. If grass per cow is high, a high margin is almost certain, and vice versa.

The report shows that the MDF's grass-growing input levels and costs are pretty stable. The report reveals the impact of topping on the cost of grass, an increase of more than $20/tonne DM. However, the expectation is that, in the next couple of rotations, higher quality and higher utilisation of grass will still generate a higher margin.

Supplements

The next seven lines (18-24) in the table look at the supplements being fed: the quantity, the price, and an estimate of supplement wastage. All feeds are wasted to some extent, which needs to be allowed for, and that waste reduces feed margin.

Supplement prices have an important impact on the feed margin. But this doesn't necessarily mean that feeding a supplement, at a higher price, or feeding more of it, does not get more margin.

It is difficult to know the marginal milk response from an extra kilogram of supplement, but by monitoring feed margin over time, a farmer at least knows the average response being achieved.

Feed intake and efficiency

Line 26 shows total feed intake per cow. Intake level is a major driver of feed efficiency or how well the feed is used. This is because higher intake leaves more for milk production, after the first 5-6kg of food is used for the cow's maintenance requirement.

Feed efficiency is shown in line 25. If the cow does not get much milk from feed, because of the proportion lost to maintenance, the feed margin is reduced.

Lines 27 to 29 show the energy, protein and fibre levels in the whole diet. Feed efficiency will be lower, and margin lower, if these are not in balance.

Production

The next block, from lines 30 to 36, shows the detail of what the cow is producing (litres, and fat and protein composition), and any change in body condition. These are important to know because they give some idea what the cow is doing, i.e. is the cow using body fat for milk, or vice versa, is some food being used to build body fat?

The fat test gives some idea of ration balance.

Income and costs

The milk income is broken into the money that the protein kg, and the fat kg, are actually returning, (considering that protein is paid double fat), and shows the amount of money each cow has deducted because of the litres it produces — Lines 37-41. It always surprises me that each cow is charged about 60 cents per day for milk volume produced.

Line 42 shows the milk income per cow (which is milk price, times the quantity of milk being produced), and Line 43 shows the total of the feed costs.

Lines 44 and 45 show the Margin Over All Feed, including grass, and not just supplements. Including the cost of grass in the calculation of feed costs, and therefore in the feed margin, gives a real value to that grass, focuses on the feed input that generates the best margin.

Farmers need pay whatever is asked for supplements, but it is within their control to manipulate the quantity of grass they produce, and the cost of producing it. Finally, to Line 46: this is how much money the farm is making after all feed costs (all grass growing, and all purchased feed costs) are subtracted from the milk income. This is the whole farm feed margin, $1644 per day.

The feed margin pays all the non-feed costs for the farm — labour, repairs, rates, insurances, debt and so on, hopefully leaving some for profit. Is it enough? The farmer will have to look to their whole farm budget to work that out. ▶

Comparison

The MDF feed margin table includes indicators to enable comparison with the performance of other farms: Margin per Cow (farm margin over the numbers of cows) and Margin per Hectare (farm margin over the number of hectares).

Both are important and meaningful indicators, because both the herd of cows and the land are the two major investments and the on-going non-feed costs needed to get the feed margin.

Look at what the MDF report tells about two different farms. The column on the far right is for another farm in the district — it has been chosen because it is distinctly different in feeding performance to the MDF.

It's Farm Margin Over All Feed (MOAF)/day in Line 46 ($1023) is lower than the MDF's ($1644), partly because it is milking fewer cows.

By comparing the Margin per Hectare (Line 45) and Margin per Cow (Line 44), the feeding performance of one farm against the other can be compared.

In this case, the MDF is doing better per hectare ($22.84 compared to $15.04/ha/day) and per cow ($5.14 compared to $3.41/cow/day).

What drives the difference performance between these two farms?

Firstly, the cost of feed per cow (grown grass and supplements) on the other farm is much less than the MDF. If performance was compared on this measure, the other farm would win hands down.

But clearly lower costs in this case are not for the better. The MDF has a higher grass consumption/ha (50kg DM/ha/day compared with 40kg DM/ha/day). Stocking rates are the same, so MDF has a higher grass intake per cow (11.2 to 9.1 kg DM/cow/day).

So, is there an opportunity for the other farm to spend more on water and nitrogen and increase grass intake? Maybe more careful irrigation, less waterlogging, more topping, would get more grass consumed. Maybe increasing grass consumption/ha needs a higher stocking rate, but that would probably reduce grass per cow.

The fibre level of the whole diet on both farms are similar, but the MDF cow intake is much higher (16.9 compared to 13.4kg). So, the other farm has a strong opportunity to get cow intake up, get feed efficiency up, to get a higher margin. This could be achieved by growing more grass and/or feeding more grain.

'The feed margin must be positive and large to have any hope of paying all the other costs.'

Hopefully, the cows on the other farm could actually eat the extra feed at this point in their lactation.

This is a snapshot of a 10-day period in December and this margin will move up and down as things change.

Some might look at the different margin between the two farms, and say, "does it matter much?". A difference of $7.80/ha (if it could be maintained) on a 68ha milking area, over a 300-day lactation, is worth $159,000 for the year — a significant amount.

The other farmer can use the information in this report to work their way backwards through the figures to see where the differences are, and look for clues to lift their own farm's performance.

Of course, the MDF can do the same to interrogate the data of a higher performing farm, and use this to set some "stretch targets" to lift performance even further.

The figures in the MDF report are real and provide a good basis to think through the farm's feed margin performance. The figures do not prove that the MDF input settings are optimum, not by a long shot.

But they are saying: "This is the margin we are getting in today's circumstances, and this is how we are getting that margin".

Farmers can ask themselves: What margin are you getting today, and what is the level of your inputs? We would all learn from you, if we compared in the same way with these indicators?

The three indicators highlighted bright yellow in the table — the actual farm margin in dollars, the grass consumption per hectare, and the milk per cow are the big indicators. The latter two are the essential efficiencies.

Watch feed margin all the time. Getting good weekly feed margins means the yearly profit has more chance of being achieved.

Meaningful indicators tell a meaningful story. Good decisions come with good data.

The industry needs a standard and agreed "method" to sensibly assess, not argue about, the feed margin.

It would guide extension to help us get to the bottom of all the talking about farm feeding performance, and, best of all, help us all make a dollar. D

**Frank Tyndall has dairy farmed, worked in dairy extension, and as a farm consultant. He been analysing farm and feeding performance for 35 years. He has developed the Farm Tracker to help him see what grass growing, feeding, and milk production performance is actually happening on farms, every week. Contact him on mobile 0409 940 782 or email <ftyndall@ozemail.com.au>.*

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Course explores art of feeding cows

Key points

- Advanced nutrition course challenges farmers
- Explores the cow's metabolism in depth
- Create nutritionally balanced milker diets

By **Marian Macdonald**

THE art of feeding dairy cows is swathed in layers of scientific jargon. Now, a new advanced nutrition course is helping farmers master the combination of biology, chemistry, animal husbandry and accountancy needed to optimise cow health and performance.

Among them is Gippsland dairy farmer, James Clyne, who was often left baffled by conversations around feeding his 920 milkers and their replacements.

"I'd ring my brother, who's a nutritionist and sometimes I didn't understand what he was saying," Mr Clyne said. "It's no good just winging it, you've got to get a grip on your business."

Mr Clyne was one of the first dairy farmers to graduate from the Advanced Nutrition In Action (ANIA) course, which had been under development by Dairy Australia for three years before being rolled out in 2018.

"I don't know if the course should be called 'advanced' because, although the material is dense and quite daunting at first, it's something that every dairy farmer needs to know," Mr Clyne said.

The ANIA course is a serious undertaking for participants, who must pass an entry quiz and commit to attending eight workshops across a season coupled with significant online study. There is also an investment of $1500 in course fees.

Dairy Australia's Cath Lescun, who developed the course with Dr Steve Little, describes the format as a "flipped classroom".

"Participants prepare for the class time by reading at their own time and pace," Ms Lescun said. "Rather than learning the material for the first time in the class, they come to workshops for a good discussion, to fill in the gaps and get a lot more out of the experts leading the course.

"It's more intense than others Dairy Australia has offered in the feedbase area but, in time, there will be more like it.

The ANIA course is a serious undertaking for participants, who must pass an entry quiz and commit to attending eight workshops across a season coupled with significant online study.

"We've had feedback that people are wanting to learn more at a high level and have better conversations with their nutritionists.

'I don't know if the course should be called 'advanced' because, although the material is dense and quite daunting at first, it's something that every dairy farmer needs to know.'

"We are introducing a nutrition fundamentals course this year as a stepping stone to ANIA."

While acknowledging the financial and time commitments were "something of a barrier", Ms Lescun said the pilot program had been well subscribed. Six courses of up to 16 participants were filled in the first year.

ANIA is open to both service providers and farmers, who are matched during workshops to complete exercises. "Service providers talk to a lot of farmers, so we encourage them to form partnerships," said Ms Lescun.

"There aren't many courses for nutritionists and ANIA offers a stepping stone to become accredited by examination with the Australian Association of Ruminant Nutrition (AARN)."

Participants who complete all tasks receive a Certificate of Completion from Dairy Australia and may have the opportunity in the future to apply for recognition of prior learning to gain a unit of competency in ruminant nutrition.

ANIA participants have lifetime access to the online course materials, tools and virtual discussion groups.

"The course gets down to the fundamentals and provides resources that allow you to keep going deeper with information from around the world and within DA that you might not have known existed," Mr Clyne said.

The ANIA course encompasses three core elements:

- Feeding the milking herd and heifer replacements.
- Optimising herd productivity, health and welfare.
- Developing and implementing nutrition strategies.

The comprehensive course explores the cow's metabolism in depth and teaches farmers how to create nutritionally balanced milker diets that maximise margin over feed costs (MOFC).

Managing risks such as mycotoxins, heat stress and the transition from calving to milking are all covered in the second unit, which includes practical on-farm exercises.

The final element of the ANIA course focuses on how farmers will plan and implement changes that match their farm business objectives.

"We realised that simply focusing on improving nutrition wasn't enough," Ms Lescun said.

"The way farmers feed cows must reflect what they want out of their business, which also takes their personal, financial and family goals into account.

"The feedback we've had is that this course is powerful.

"In the six programs we ran during 2018, the average score participants gave the third unit was 9.2 out of 10 for the value to their businesses."

James Clyne certainly agrees.

"There were a few months between the last day of the course and our return to present what we'd done back to the group," Mr Clyne said. "Everyone was very motivated and all of us had changed something."

Since ANIA, the Clyne farm has improved its stock water infrastructure and adjusted the way feed levels and types are changed. The results have been impressive.

"I now transition all my animals from one feed to another more gradually than I used to," Mr Clyne said.

"For example, I now gradually move from lead feed to full milker ration over 10 days and take a similar approach for weaning calves and drying off cows as well.

"The heifers did an extra litre of milk to peak lactation and the conception rate improved 10 per cent even though we are still feeding the same amount of grain.

"ANIA's not just for those of us feeding higher levels of grain and, in my class, there were farms milking 100 cows right up to 1000 cows. I've told everyone they need to do this course."

Dairy Australia will run no more than two ANIA courses in any region each year and has already slated them for Tasmania and Gippsland during 2019, with the possibility of running them in Northern Victoria, South Western Victoria, New South Wales and the subtropical dairy region given sufficient demand. D

Dairy Australia's advanced nutrition course is more intense than others it has offered in the feedbase area.

Gippsland farmer James Clyne says every farmer needs to complete Dairy Australia's advanced nutrition course.

Get shed design right from start

Key points

- Shed design needs to be planned from start
- Look at orientation, ventilation, cooling and bedding
- Ensure effluent management planned

TO house cows, or not to house cows? That is the question. One sure thing in modern-day dairies is that there are many ways to farm — and no one way is necessarily right or wrong. For those considering housing cows, there are some common mistakes that can be easily avoided.

The next generation has exciting technology at their fingertips, but they are also faced with many more decisions and options when it comes to caring for cows.

And the reality is, that what often starts out as a pad to conserve feed, leads to putting a roof over it, which inevitably progresses to a barn.

Nico Paloto, Philip Schulz and Sue Hagenson form one of the most experienced collectives when it comes to helping make these decisions a reality. All worry that the basics are still being overlooked in Australia.

They point to the lessons the United States learned the hard way, and advise Australian dairy farmers not to reinvent the wheel if they want their final results to match their expectations.

All three have an identical message for Australian dairy farmers looking at barn design: do the homework, don't cut corners and always have the bigger picture in mind.

Mr Schulz, from Dairy Concept, said in a tight economy, it was logical for dairy farmers to progressively work towards housing cows using a modular design as they could afford it or wanted each new addition. But, he said, it was important to plan for the entire facility at the start, so that everything was accounted for.

One of the first errors people made was their barn orientation, while the second was not planning for that ultimate finish line.

"Every revenue-earning barn in North America runs east to west," Mr Schulz said.

"If you put the cows under the roof for 24 hours a day, then a north-to-south orientation is capable of killing cows in an afternoon. There is nowhere for them to get away from the sun. They'll be in potentially 60-degree Celsius heat.

In Australia, many farmers begin the transition to housing cows by putting in an outdoor feed pad with a loafing pad each side. This pad is oriented east to west.

"The US dairy farmers made those fundamental mistakes 15-20 years ago because they were the pioneers of this technology. Why do we need to go through the pain barrier they went through, if we don't have to?"

'The US dairy farmers made those fundamental mistakes 15-20 years ago because they were the pioneers of this technology.'

Ms Hagenson, who is Artex Barn Solutions' senior dairy specialist, agrees that getting the barn design right upfront is critical. It can ultimately save money and, in extreme cases, save catastrophe. She warns most DIY efforts in barn design were a false economy that, more often than not, ended badly.

"Australians and Kiwis have a 'can-do' attitude and they often think that getting a professional experienced person in barn design is too expensive," she said.

"Is it? Or is it the best money you will spend? It will be interesting down the track to see what the lost opportunities were for some of those guys that made the DIY decision.

Every barn has different features, and this Canadian example is no exception. The head-to-head free-stalls on the right are for the cows to rest on mattresses with wood shavings or chopped straw as a top dressing. On the left, the farmer has deliberately added stalls for feeding to help stop bullying. An alley scraper passes through without interfering with the cows eating. The feeding surface has not been cleaned for several years, and has maintained itself. Photo supplied.

"I've often seen farmers install cheap fans so they feel better because they've done 'something'. Then I've seen their cows standing not two metres from those fans covered in flies. They were clearly not doing their job. It has cost the farmer what he paid for the fans, the wasted electricity, and a multitude of negative implications for the cow. ▶

New dairy shelter helps cut feed wastage

A SCOTTS Creek, Vic, farmer is enjoying a 10 per cent increase in milk production, a 33pc reduction in feed waste and improved animal health after his first season using a new dairy shelter.

Andrew Vogels said the shelter built by Dairy Shelters Australia was the best investment he had made in years.

Andrew and his wife Zoe along with Andrew's brother Jamie and his wife Sheryn run Scotts Creek Dairies in south-west Victoria.

They milk 630 Friesian-cross cows off their 365-hectare main farm with a further 242-hectare outpaddock for young stock and silage and hay.

Their farm is in a high rainfall area, leaving many paddocks inaccessible and damaged each winter.

"We've always had problems with heavy soils and pugging and trying to manage cows on the farm during July and August," Mr Vogels said. "We needed a place to put cows where they could be fed and be comfortable."

The 3200 square metre shelter has been a success since the first cows entered for calving last May, easing pressure on the paddocks over winter and allowing strong spring growth.

"We calved close to 500 cows in May-June and then another mob in September and the shelter made life so much easier," Mr Vogels said.

"It's right beside the dairy, the cows are undercover and the calves are being born in a nice, dry environment. Rather than trashing paddocks with springers, a month before they were due to calve, we put them in the shelter to start their lead-feed process and then we moved them into the other half for calving. It saved a large part of the farm."

Zoey and Andrew Vogels in the new shelter on their south-west Victorian farm.

Mr Vogels said feed was being better utilised in the shelter. "There wasn't wastage from them pushing it into the ground; I reckon we've saved a third of our feed and it's more efficient from a staff perspective," he said. "Rather than travelling up to 5km to feed cows, we can feed them here and it's a better use of our time."

Mr Vogels said the farm had made 700-800 additional rolls of silage and hay; an increase of about one-third on previous years.

"It's hard to tell first year and because we've had a good season but the shelter has definitely helped," he said. "The pastures have held up a lot better and we've put in crops for the first time because we won't have to use those paddocks in winter if it gets wet."

The farm has used the shelter for artificially inseminating cows, and during peak milking time Mr Vogels rotated a third of the herd through the shelter every three days.

"Not having to walk up wet hills has made a huge difference to those cows," he said.

Pasture management was the main reason to build the shelter but it's had other benefits.

"We built it for a purpose and it's definitely served that purpose," Mr Vogels said.

"It's helped with reducing feed wastage, pasture growth and cow health and comfort, but it's worth it just for making calving easier.

"It's also good for farmer mental health. I reckon every farmer has been lying in bed at midnight listening to the rain belting down worrying where am I going to put the cows tomorrow. Now they can go in the shelter."

Mr Vogels will consider expanding the shelter in the future.

Scotts Creek Dairies hopes the shelter will pay for itself in five years. "With what we've seen so far, we're confident we will do that," Mr Vogels said.

Dairy Shelters Australia was the brainchild of Victorian dairy farmer Simon Rea and vet David Colson and uses New Zealand-made Redpath clear-roofed, deep-litter shelters customised for the Australian dairy industry.

Article supplied by Dairy Shelters Australia, website <http://dairysheltersaustralia.com.au/>.

◀ "Bigger fans, bigger HP [horse power] motors may be more expensive per fan, but you need less of them, it takes less electricity to run them, you spend less money on regular maintenance and your cows will pay you back in so many ways if their environment is right."

Mr Paloto, Daviesway's dairy equipment sales and planning manager, concurs, saying poor design is the "silent thief" in barn design. He also said it came down to awareness.

Space and avoiding the heat

For confined housing, that plan includes allowing either one bed per cow in a free-stall barn or a minimum of 12 square metres of space per cow in an open-pack barn for high-production Holsteins.

The three experts have seen as little as 4.5m^2 per cow allowed.

Australia is beginning to follow the northern hemisphere's lead on some inland farms where the summers can be brutal. This naturally ventilated free-stall barn is sited in northern Victoria; it has an east-to-west orientation, flood-wash alleys and sand bedding. Photo supplied.

In confined housing situations, it is recommended that cows need a minimum of three metres per second of wind speed moving over them, and a minimum of 10cm (lineal) of surface water trough area per cow.

Mr Schulz said: "Cows are among the most sensitive to heat stress of any domestic animal. They drink 200 litres a day per cow, and the most comfortable temperature range for them is between five and 16 degrees Celsius. High-producing dairy cows can exhibit mild heat stress at 18 degrees. People shouldn't judge a cow's body temperature by their own. It is quite different."

Radiant heat under a barn roof remains a major concern if the roof was less than 4.5m above the cow.

Ms Hagenson said: "If a roof is too low, there is often no room to solve it by effectively ventilating the area with fans. Fans may be able to be placed in there, but they'll most likely be inefficient, because there isn't an optimum way for the air to move around the cow."

"Dead spots", where heat spikes in sections of a barn causing heat stress, could happen if the wind direction,

New shed helps cows stay cool

STEVE and Deanne Hore's farm near Leitchville in northern Victoria has been a good breeding ground for top quality cows, as well as footballers.

It's also a relentlessly hot farm and their latest investment is part of a long-term plan to manage seasonal variability, with animal welfare and risk management at the heart of the move.

The Hores have constructed a 150 metre by 45m shed to house the herd providing the cows with shelter, fans and a sprinkle of water when needed. The shed is part of a move to a total mixed ration system, which is part of their strategy to better manage their feedbase to respond to climate and water variability. It's a big investment but it has revolutionised the farm

As he nears 50, third-generation farmer Steve hopes innovations like the shed will ensure a fourth generation continues to farm the land.

Their oldest son Marty has recently made his debut for Melbourne in the AFL after a successful VFL career at Collingwood but likes to get back on the farm when he can. Younger son Brady, also a top footballer locally and in the TAC Cup, works on the farm and has been heavily involved in building the new facility.

Both follow in the footsteps of Steve who won local league and club best and fairest awards. "The two boys have more natural talent than me," Steve said.

Daughter Kelsie also works in the dairy industry with Genetics Australia and helps on the farm and promoting the family's Elmar Holsteins stud.

Steve Hore in the newly constructed shed on his farm in northern Victoria.

Elmar Holsteins showed five cows at International Dairy Week this year. All finished in the top 10, including a two-year-old that won the best udder in her class and was reserve intermediate champion. The stud has previously won four champion cow titles.

The new shed evolved out of plans for a concrete feedpad. The heatwave last summer prompted them to go further.

"After last year's hot spell, we realised we needed to better house the cows, so we added the shed to the concrete feedpad to improve cow comfort," Steve said.

The shed has a concrete centre alley and the cows live on either side on a compost pack.

The cows moved in at the start of January and the Hores are already noticing the benefits. "They now have sprinklers, fans and shade and they're happy and comfortable," Steve said.

Along with animal welfare benefits, Steve and Deanne hope the new shed will lead to better production and feed utilisation.

"Weather plays a big factor in production loss, especially the heat but the wet can also affect us," Steve said.

Steve has noticed the weather becoming hotter in recent years. "The seasons seem to be changing a bit; the hot weather seems to be coming later and lasts a bit longer, and the wet is more unpredictable," he said.

As part of the move, the farm's grazing strategy will also change.

"The cows might get out in the autumn, but we'll use the land for growing fodder and the cows will be housed 24-7 in the new facility avoiding the heat. We'll grow more crops and harvest more silage," Steve said.

"We'll use water in a different way by growing more dry matter per megalitre by not grazing paddocks and growing more forage crops, such as maize, vetch and cereals."

He expects increased production to justify the cost of their infrastructure.

Steve and Deanne did extensive research before greenlighting the investment.

"There are other farms in Australia using the system and most of North America is the same," he said. "We're using their resources and knowledge to do it out here.

"We love what we do; we're passionate about it and still young enough to want to be farming.

"We're always trying to improve things and make it easier for us and the cows."

This head-to-head free-stall barn in Wisconsin, US, is for high-production cows. The mattresses have chopped straw, while louvre fans and panel fans work strategically to keep cows cool.

turbulence and velocity was incorrectly calculated for comfortable oxygen exchange.

She acknowledges that incorporating ventilation, air movement and water cooling in barns increased the investment, but said it was a vital important component that could be handled with forward planning and budgeting.

"Fans are only part of the cooling solution," she said. "The fans create the turbulence and they create the wind-chill factor to a degree. But the most effective way to cool a cow is to wet her, and to add fans.

"Feedline soakers, soaking cows in the holding yard, or high-pressure fogging are all options. If you want to use water, you have to make sure you have enough water, and the ability to collect and manage the additional water coming off the barn."

Bedding challenge

Bedding was another challenge in confined cow housing.

Mr Schulz said it was a mistake for Australians to use rice hulls, bark chips and/or a combination of straw in compost barns. Kiln-dried sawdust was the ideal product to achieve the carbon-to-nitrogen ratio necessary to make a compost pack generate the heat needed to kill pathogens, evaporate excess moisture and to keep the biological mass active.

"It's fair to say that a big percentage of people in Australia are potentially looking at making mistakes in bedding," he said. "And I think some of that comes back to misuse of the words 'compost barn', because many instead want a 'resting pack' or a 'manure pack', not a 'compost barn'. I would like to see more widespread understanding of what a 'compost barn' actually is.

"A compost pack is an active biological mass. We're looking for 50-55pc moisture — as soon as they reach in the high 50pc to low 60pc, we have bedding sticking to the cows and then we have a much higher bacterial load on the cows. Without the compost pack working at the right temperature, we're increasing the chances of a bacterial load and mastitis outbreaks — and we're talking about a mastitis that is very hard to manage and to treat."

Mr Schulz said compost barns needed permanent mechanical ventilation.

Permits, power and foundations

Mr Paloto stressed not to underestimate permit, power and effluent solutions. While these were all seemingly obvious considerations, they were often overlooked.

The quality of the foundation dictates the finished article. "If the fundamentals are done right, the next stage of milking automation doesn't have to be a poorly sited 'add-on'," he said. "Good design won't cover poor management, but poor design and poor management is a disaster." D

Article supplied by Daviesway, website <https://www.daviesway.com.au/>.

This free-stall barn in Wisconsin in the US features longer stalls to allow for maximum cow comfort in summer. The cows are under fans, sitting on mattresses with chopped straw, and with the luxury of flush alleys. Photo supplied.

This compost barn in Kentucky in the USA proves dry matter does not stick to the cows when the compost pack is well-managed. Photo supplied.

AFIA Fodder Conference 2019 - connecting people with the land

Key points

- ✓ What: AFIA National Fodder Conference
- ✓ When: July 29-31
- ✓ Where: Hunter Valley, NSW

The Australian Fodder Industry Association (AFIA) is putting together a thought-provoking and engaging program to share with dairy farmers over the coming months. Situated in the Hunter Valley, NSW in 2019, this years conference and pre-conference tour itinerary includes Hunter Valley region farm visits, tastings with food producers and wineries, visits to national parks, presentations from industry leaders, farmers and agronomists, a revitalised AFIA Members Day with Members Breakfast and workshops, and plenty of opportunity to network and socialise over dinner and welcome cocktails by the pool. Subscribe to get the latest updates in AFIA's e-newsletter 'FODDER on the fly' for the 2019 National Fodder Conference, which will take place from July 29-31 at the Crowne Plaza.

The theme of this year's conference is Our Place, which evokes the connection between people and the land. The theme pays homage to the popular Our Place session, which is held at every conference. During these sessions, local growers from the region where the conference is held share their farming experiences. Considering the drought, AFIA want to celebrate and support fodder producers all over the nation. They will share the stories of those in our host state of New South Wales as well as those who are creating and championing change in the industry.

AFIA are delighted to have National Farmers' Federation president Fiona Simson to deliver the welcome address. Fiona will discuss the NFF's vision for Australia's agriculture industry to exceed $100 billion in farm gate output by 2030. The current trajectory is for the industry to reach $84 billion by 2030 so there is lots of work to do to meet this ambitious target. The NFF has identified the challenges ahead and laid out a roadmap for how we can get there. It says there must be a collaborative approach among farmers, other partners in the industry, government and the Australian public to achieve these goals.

Fiona Simson, President National Farmers' Federation

AFIA will also be welcoming Major General Stephen Day from the Joint Agency Drought Taskforce to present a keynote address at the 2019 National Fodder Conference. General Day brings extensive experience in leadership, governance and strategy to his role as Coordinator General for Drought. In his role, General Day will ensure meaningful support reaches farmers affected by drought through the planning coordination and rapid delivery of measures included in the Government's drought response, and remove any blockages to achieving this.

Major General Stephen Day, Joint Agency Drought Taskforce

Also joining the conference for a keynote address is Professor Derrick Moot from New Zealand. Professor Moot leads the dryland pastures research team at Lincoln University. His research aims to create farm systems that are resilient to climate change, particularly in dry eastern regions of New Zealand. His specific interest is in using legumes on-farm and he has been instrumental in increasing the use of lucerne as a major feed source for sheep, beef, deer and dairy systems. His focus is on using science to produce transformational change on farms and he is regularly asked to discuss these impacts with farmers in NZ, Australia and South America. A panel of farmers and industry representatives will follow the keynote to discuss lucerne production in Australia.

Derrick Moot, Professor of Plant Science, Lincoln University NZ

AFIA is also excited to announce our MC for the event, Airlie Landale. Airlie is founder of Farm Table and Farmer Exchange, which is an online platform dedicated to connecting farmers with the latest research and resources, and to each other, to help them to navigate the complexities of farming. Airlie was born and raised on a mixed farming property in the Southern Riverina. Whilst on farm outside Deniliquin, she put her farming passion together with her business skills to work to help farmers overcome isolation and the barriers to learning. Farm Table and the Farmer Exchange helps bridge the digital divide, connecting farmers across generations and across the country. Airlie is well placed to lead discussions between farmers, government, academia and industry during our plenary sessions.

Conference MC Airlie Landale, Managing Director Farm Table

AFIA want to honour our members as the vital backbone to our industry association. This year a new social function has been added, AFIA's Members Breakfast, to begin proceedings for our members-only workshop day on Monday. The members breakfast will feature guest speakers sharing their innovative business practices in fodder and related industries whilst members catch up over a cuppa and bacon and eggs before the workshops begin. This year's workshops will feature modules on finance, silage contracting and transport. You must be a member to attend the members breakfast and workshops. Non-members will have an opportunity to sign up on the day.

Much interest is expected in this year's conference program including the pre-conference tour, which sold out last year. To avoid missing out, we advise members to return registration forms back promptly. Registration details and information on the tour will be sent with conference registration packs in May.

This year's National Fodder Conference will be held at the Crowne Plaza Hunter Valley resort, NSW from the 29-31 July 2019

$3000 scholarship available for young forage professionals

Applications are now open for this year's Gen Ag Future Fund, a scholarship that aims to boost the skills of the next generation of people working in the Australian forage industry. Sponsored by Lallemand Animal Nutrition in association with the Australian Fodder Industry Association, the $3000 scholarship can be used to undertake study, work experience or any other project that will benefit the successful applicant and the wider industry.

Last year's winner was fifth-generation South Australian farmer, Cameron Lowe, who impressed the judges with his vision to gain a better understanding of enterprise diversity and the role of fodder crops in weed control programs.

On his travels Cameron learned "the Chinese don't buy fodder, particularly oaten hay, from Australia because we're the closest producer – they buy it because it's the best. This is a really big opportunity for Australia. The Chinese government is committed to becoming self-sustainable but they are going to reliant on imports for many years to come. Every square inch of arable land in China is sown to corn, rice or wheat but it's still not enough to supply their rapidly-growing livestock industries, which in turn are struggling to meet the needs of their urbanised population."

Lallemand Animal Nutrition Managing Director – Australia, Alex Turney, says his company is proud to support the scholarship. "As a global leader in microbial technology used in the livestock industry, Lallemand is committed to working with and supporting the forage sector," Alex commented.

"I encourage all young farmers, contractors or university students to consider how they could use this scholarship to further their education or career."

To enter, individuals must provide a 500-word cover letter describing their proposed study or project and a resume. Applicants must be an Australian citizen aged 18 to 30 years and a current or eligible AFIA member. Applications will close at 5pm on Monday 10 June 2019.

Applications will be reviewed by an assessment panel comprising AFIA and Lallemand representatives. The 2019 winner may be asked to make a presentation to the 2020 National Fodder Conference. For further details, contact John McKew, Chief Executive Officer, Australian Fodder Industry Association on (03) 9670 0523, 0438 182 600 or john@afia.org.au.

AFIA
Australian Fodder Industry Association

2019 National Fodder Conference

Mon 29 July

AFIA Members Day Workshops Program

NEW AFIA Members Breakfast sponsored by Fodderlink Guest Speaker: Toni Barton, The Original Lamb Bacon Co VIC	
Business Management Workshop Sponsor TBA	**Exporters & AEXCO Meeting** (Closed meeting)
Lunch	
Transport Workshop Sponsor TBA	**Exporters & AEXCO Meeting**
Afternoon Tea	
Contractors Workshop Sponsored by Lallemand Animal Nutrition	**AgriFutures Australia Advisory Panel Meeting** (Closed meeting)
Welcome Cocktail Function sponsored by Tama Australia	

AFIA
Australian Fodder Industry Association

2019 National Fodder Conference

VR4487139

Tue 30 July

Conference Speaker Program

Registration and Coffee Bar (approximately 8am)

Welcome Session

Master of Ceremonies Airlie Landale Managing Director, The Farm Table
Welcome To Country Senior Custodian Wonnarua People
Federal Ministers Address Federal Member of Parliament
Welcome Address Fiona Simson President National Farmers Federation

Morning Tea

AFIA AGM Session

AFIA Year in Review John McKew CEO Australian Fodder Industry Association
Annual General Meeting Frank McRae Chair Australian Fodder Industry Association
New Machinery and Product Preview

Lunch

Fodder Economies Session

Panel Denis McGrath Executive Officer AEXCO
Sofia Omstedt Industry Analyst Dairy Australia VIC
Mark Harrison Senior Research Fellow, Queensland University of Technology
AFIA Gold Sponsor Address

Afternoon Tea

Lucerne Session

Keynote Speaker Derrick Moot Professor in Plant Science, Lincoln University, New Zealand
Panel Greg Brooke, Research and Development Agronomist, NSW Department of Primary Industries

Conference Annual Dinner Sponsored by New Holland Agriculture

Wed 31 July

Registration and Coffee Bar

Climate Risk Farming Session

Keynote Address Sarah Barker, Head of Climate Risk Governance, MinterEllison
Chair Lucinda Corrigan Chair, Farmers for Climate Action

Morning Tea

Drought, Health and Safety Session

Keynote Address Major General Stephen Day, Coordinator General, National Joint Agency Drought Taskforce
Panel Speaker Kate Gunn, Research Fellow, Department of Rural Health University of South Australia

Lunch

Irrigation Session

Conference Close (approximately 3pm)

AFIA
Australian Fodder Industry Association

2019 National Fodder Conference

VR4487141

2019 National Fodder Conference Sponsors

Conference Convenor

AFIA
Australian Fodder Industry Association

NEW HOLLAND AGRICULTURE
Annual Dinner Sponsor

Tama FARM GROWN SOLUTIONS
Welcome Function Sponsor

FODDERLINK
Members Breakfast Sponsor

GREVILLIA AG
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Contractors Workshop Sponsor

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Venus PACKAGING
Name Badges Sponsor

AFIA
Australian Fodder Industry Association

2019 National Fodder Conference

VR4487142

High-quality speakers for event

Key points
- ✓ Theme "Our Place"
- ✓ Connecting people with the land
- ✓ Features range of Australian and international speakers

Denis McGrath

Denis has a Bachelors in both Agricultural Science and Business (Marketing) and throughout his career has been involved in agriculture with a focus on broad acre cropping, research and seed production. Currently Denis works as a consultant managing two major projects;

AEXCO Executive Officer (commenced 13th December 2010). Manage all aspects of the commercialization of the National Oat Breeding Program licensed varieties on behalf of the AEXCO shareholders.

End Point Royalty Steering Group Agent. Objective of the role was to improve the royalty capture systems of the major broadacre plant breeders / seed commercialization companies of Australia.

Greg Brooke
Research and Development Agronomist Dryland (Winter Cereals, weeds and farming systems)
NSW DPI Agriculture

Greg Brooke commenced in this role in May 2013, Greg Brooke's principle areas of work include winter cereal agronomy, weeds and herbicide resistance, and advanced seeding/no-till systems and farming systems.

LUCINDA CORRIGAN - FCA CHAIR

Growing up in Western NSW, Lucinda now runs a large multi-property cattle genetics enterprise with her husband in the Murray Valley, east of Albury. Lucinda's leadership on climate change adaption in the grazing industry was recognised by the National Climate Change and Research facility, being named the 2012 Climate Adaption Champion. To accompany this, Lucinda is also the Director or Chair of multiple Organisations and Councils, including the Commissioner of the Australian Centre for International Agricultural Research.

Mark Harrison is a biochemist with extensive basic, applied, and commercial research experience. He is a Senior Research Fellow and foundation member of the Queensland University of Technology Centre for Tropical Crops and Biocommodities).

Mark also provides consulting services to the Australian food and bio-industrial sector. Research in his group is focused on the conversion of agricultural residues into more valuable food, feed, fibre, fine chemical, and fuel products

Sarah Barker
SPECIAL COUNSEL, MINTER ELLISON

B.COM (ACC & FIN), LLB (HONS), M.ENV (HONS) Sarah Barker is Head of Climate Risk at MinterEllison. She has two decades' experience as a corporate lawyer, and is regarded as one of the world's foremost experts on investment governance issues relating to climate change. Her expertise is sought by public and private sector clients across Australasia, and by global institutions from the Bank of England to the United Nations PRI.

Sofia Omstedt
Industry Analyst
Dairy Australia

Sofia joined Dairy Australia early 2017 as part of the Trade and Strategy group. With a focus on global dairy demand and Australia's domestic market, Sofia provides analysis and insight for both DA and external industry publications, and is a co-author of DA's Situation and Outlook reports. Her role involves contact with all levels of the dairy supply chain; from suppliers of farm inputs to farmers, milk processors, traders, retailers, consumers, media and government.

Toni Barton

In 2013, after 17 years working in financial services, Toni Barton decided that she wanted to grow her own food, understand our food systems, and find ways to provide food for her family and friends.

She settled on a property in Central Victoria, even though she spent time on her parents dairy farm, it was hardly enough to give Toni confidence in running a farm, let alone farming sheep.

In 2016 her family and friends experienced what was to become Victoria's biggest producer of lamb through farmers markets.

In 2019, Toni is proud to be feeding thousands of consumers each month, 100% grass fed Australian White Lamb. The only challenge she had was value adding the entire carcass, this was difficult as the one piece of the lamb that had little to no value was the lamb belly (or flap). In 2016 Toni started to experiment on ways to use this cut. Why couldn't she make bacon from it, just the way you do with pork. A salt cured, smoked lamb belly. The story of Australia's first Lamb Bacon product is inspiring filled with triumph and tragedy.

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Potential game-change for tick disease

Key points

- ✔ Extensive research into tick-borne disease Theileria
- ✔ Disease has become more widespread since 2006
- ✔ Drug trial offers promise

By **Jeanette Severs**

A GAME change is about to occur in the field of treating Theileria disease, with the recent approval for a minor use permit of a medication in Australia for research purposes.

Theileriosis is a tick-borne disease, caused by organisms of the Theileria group, that infects blood cells of cattle and reduces the oxygen supply in sick cows; and may lead to the collapse and death of the animal.

Bairnsdale, Vic, veterinarian, Dr Jade Hammer, has dedicated the past few years to studying the disease, including as the subject of a Masters thesis through the University of Sydney. He recently received approval to import and use the Buparvaquone drug, after a lengthy lobbying process.

Dr Hammer and his veterinary colleagues in Gippsland, Victoria, see a few hundred cases of Theileria disease affecting cattle annually.

Dr Hammer led research into identifying which ticks and other biting insects contributed to the spread of Theileria. He concluded the *Haemophysallis longicornis* tick was the culprit and Theileria infection in cattle occurred during the sexual reproductive phase of the tick.

"This phase results in changes in the parasite that helps it evade the immune system," he said. "The tick bites the cow and transfer of the disease occurs."

Mechanical transfer can also occur, although cows infected through this method tend not to show high levels of the disease.

Dr Jade Hammer with some of the steer calves that were part of his research into Theileria.

"Their growth rate is reduced and they get a fever, but there are fewer production losses than the cattle affected who receive the disease from the tick," Dr Hammer said.

Dr Hammer undertook clinical research into transmission on a group of Friesian steers, over a period of 12 months, from the ages of six-to-18-months. Different quantities of blood, containing the parasite and disease, were injected into the steers, to measure how much blood was required for transmission.

"Theileria has been recognised in Australia since 1910 and is found in all the mainland States, but was considered benign. Since 2006, outbreaks ▶

How to spot theileriosis

CLINICAL signs for theileriosis include: anaemia; lethargy (lack of willingness to walk); weakness; fever; jaundice (yellowing/pale gums); increased heart rate; difficulty breathing (gasping if forced to run); drop in milk production; abortions; still birth; dystocia; death. As these symptoms can also be linked to other conditions it is important to confirm diagnosis with a veterinarian.

Diagnostic tests include microscopic examination of the blood, antibody tests and PCR (polymerase chain reaction — which detects the DNA of the organism).

Individual nursing care of affected stock is recommended, along with minimising stress and movement. Handling of affected cattle should be avoided where possible and if movement or yarding is necessary, transfer animals slowly. The provision of high quality feed is also recommended.

◀ have become widespread in south-eastern Australia, affecting production," he said.

From about 10 days post-infection, animals show clinical signs of febrile episodes, anaemia, tachycardia, tachypnoea, pneumonia, jaundice, lymph node swelling, late-term abortions, still births, weakness and mortality.

In Australia, outbreaks typically occur — although not always — after periods of changing weather, to rain and high humidity; but throughout the nation, outbreaks have been recorded over a period of 10 months in the year. Moving cattle onto a property with a high burden of the parasite is a significant risk factor for an outbreak. The stress of transport can sometimes allow the parasite to take hold in the herd.

"So the herd can be exposed previously to Theileria, but stress — drought, nutritional, illness, mastitis, pregnancy — can all exacerbate the impact of the disease," Dr Hammer said.

In Western Australia, blood sampling of 31 herds indicated Theileria was present on up to 70 per cent of farms in the Denmark Shire. A similar blood sampling survey of herd prevalence indicated values in Queensland of 56.8pc, Victoria 34pc and NSW 23.7pc; although a separate blood sampling analysis indicated a herd prevalence of 72pc in NSW.

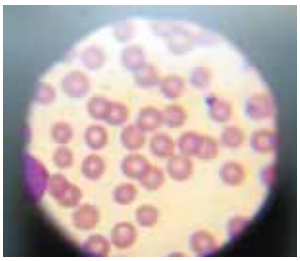
A study of annual production losses in dairy cattle affected by tick-borne diseases in Australian dairy cows showed weight loss of 23 kilograms/head and milk production loss of 683kg/head; for dairy calves, weight loss was measured at 25kg/head.

In a 2011 NSW survey of 44 properties, farmers assessed the average annual cost of Theileria disease on production as $19,783, and up to $204,000. NSW Department of Primary Industries has estimated an average cost of $58,916 for dairy producers who have Theileriosis in their herds.

"An economic impact study has shown significant negative impacts on milk production in Australia," Dr Hammer said.

"A study in 2014 showed at 100 days and 305 days of lactation, Theileria-positive cows produced significantly less milk, milk fat and milk protein than other dairy cows in the herd that aren't affected by the disease," Dr Hammer said.

That economic production loss has been measured at $202 per head, with an average drop in production of 300 litres in the first 50 days of lactation.



Theileria in a blood smear.

A cow affected with Theileria, that has died and its aborted calf.

Deaths and production losses from Theileria are significant in dairy herds, especially in southern mainland Australia.

A further cost of $1800 per cow is estimated, after death of the animal.

The disease has been estimated to cost the livestock industries in Japan and Korea about $US100 million annually.

'Tick-borne diseases is such an evolving field and there's a lot to learn about tick-borne diseases and controls.'

In a study funded by Meat and Livestock Australia, led by Professor David Emery, University of Sydney, in 2016, Theileria disease was estimated to cost the Australian cattle industry about $20 million annually (beef and dairy classes).

In the past several years, Dr Hammer investigated possible mechanical, biological and intermediate hosts, including ticks, biting flies, lice and mosquitoes, as well as needles and surgical instruments, trans-placental and colostrum transfer and even injury during transportation, as methods of spreading Theileria disease among cattle herds.

A 2016 study, funded by Meat and Livestock Australia, led by Dr Hammer, investigated the passive (mechanical or horizontal) transfer of infection. Blood from a clinically-infected donor was cryopreserved or freshly collected prior to inoculation into uninfected calves.

T. orientalis infection can be transmitted by as little as 0.1ml blood from infected to naive animals. Although mechanical transfer of infected blood did not result in clinical Theileriosis, calves remained positive for 15 months, with obvious implications for husbandry procedures and disease epidemiology. Trans-placental and colostrum transfer were also investigated, but were not demonstrated in a limited initial study.

"The development of reliable recommendations for livestock producers to counter disease outbreaks has been hampered by lack of understanding of the parasite epidemiology in Australia and whether standard husbandry practices that include blood transfer could increase transmission," Dr Hammer said.

"We know the calf has to be infected within the first few days of life. We've also demonstrated in-utero is a rare form of transmission for the disease."

Dr Hammer investigated colostrum as a medium for carrying red blood cells and consequently the disease; and concluded it was theoretically possible for calves to ingest the parasite through drinking colostrum, but Dr Hammer was unable to prove it.

"Colostrum has been shown to be positive for Theileria," he said.

But further research would have to rule out other methods of transmission.

"The more we learn about this parasite, the more complex it gets," Dr Hammer said.

"It's highly contagious and highly adapted. The tick, itself, is complicated; the parasite in the tick is complicated. And the method of transference is complicated — some calves show positive to the disease, some don't even though their mothers are positive."

It is that degree of complication that makes the news of a trial of Buparvaquone medication welcome to veterinarians and dairy farmers.

"It's registered for use in the ma-

jority of countries globally where Theileria is found," Dr Hammer said. "We want to get it fully registered in Australia."

The withholding period for use of Buparvaquone is currently a significant stumbling block in Australia.

"There is a lack of determination around the maximum residue limit," Dr Hammer said.

"But at the same time, there's an animal health issue because we have a simple solution to help more cows survive but it isn't available to us. There's also a farmer mental health issue, in the inability to effectively control or treat the disease."

Dr Hammer's application was for a minor use permit, to medicate cows infected with the parasite and disease that are in a clinical trial with the University of Sydney. The research team will measure the effectiveness of the

Ticks have been confirmed as the vector that carries a parasite to infect cattle with Theileria.

medication, towards helping future registration of Buparvaquone in Australia.

They will also compare the effectiveness of Buparvaquone against alternate therapies, including anti-parasitic drugs and antibiotics, against the parasite.

"Tick-borne diseases is such an evolving field and there's a lot to learn about tick-borne diseases and controls," Dr Hammer said.

"Theileria is now an endemic disease on the Australian mainland. We now know it changes, mutating regularly. But we have a lack of effective treatments against it in Australia.

"It's very frustrating when there's an effective medication that's being used overseas. Buparvaquone eliminates the parasite from the animal's system.

"We are hopeful our research will help develop guidelines around the use of buparvaquone, that won't negatively impact on Australia's trade agreements.

"But we also want the ability to treat the animals." D

Farms hit hard by disease outbreak

Key points

- ✔ Farms can be hard hit by Theileria disease
- ✔ Causes cow deaths and abortions
- ✔ Cows that survive usually dry off

By **Jeanette Severs**

FOR the past 13 years, many dairy and cattle herds have been impacted by Theileriosis on the Australian mainland.

Among those dairy farmers whose herds were affected are Valda and Terry Tout, Tamworth, NSW, and Rob and Jenni Marshall, Lardner, Vic.

For the Touts, who exited the industry in 2017, a drug to treat Theileriosis comes too late. But they are hopeful for others.

Terry and Valda Tout did not know about Theileriosis before 2010. In the first six months of 2010, four cows died on their farm and various causes were suggested by government officials.

Finally, a private veterinarian took some blood tests and identified Theileria.

"NSW DPI had even autopsied a couple of cows, but did not identify Theileria," Mr Tout said. "We thought it was milk fever originally."

Dr Jade Hammer, a Bairnsdale veterinarian who is also a research associate with the University of Sydney, has made research into Theileriosis his focus for many years. He has confirmed the method of transmission is a para-

Theileria cost NSW farmer Terry Tout, who has now exited the dairy industry, dearly.

'A full line of the highest performing genomically tested cow family was lost to the disease.'

site carried by ticks. "Most farmers say there's no ticks on their property, but we go out and find them," he said. "Normally, the tick is on the animal for a brief period at night.

"While a large portion of the cattle do become infected and build up an immunity, a number of cows are at risk and — particularly around calving time when the animal is under stress — we do see the same dairy farmers year after year having outbreaks."

The Touts lost 34 cows and 100 calves were aborted, with significant impact on their high performing herd.

The couple milked a 180-300 self-replacing closed Holstein herd producing 2.3 million litres of milk annually, operated two studs — Black and White Holsteins and Cowarol Holsteins — and were awarded Master Breeder status in 2006 by Holstein Australia. Their breed accolades included Supreme Intermediate Champion and Best Udder in the Holstein classes at International Dairy Week. They also won awards at the Brisbane and Sydney Royals and local shows.

"The cows affected worse by Theileria were fresh calved," Mr Tout said. "Those close to calving were aborting. The cows that survived were sick then dry for 12 months.

"We had a high-profile high-genetic herd. One of our cows was rated in the top five genomically tested animals. We had cows in the herd valued at ▶

◀ $20,000. Thirty of the cows that died were from the higher performing families. Half of the calves that were aborted were heifers. It set us back about four years in our plans."

They chose to self-quarantine, didn't attend shows and Mr Tout said he calculated a loss of $250,000 in milk production. The impact of the disease also put their expansion plans on hold, when they decided against buying an additional property.

"After the initial 18-24 months, we'd get about two cows a year die from it, until 2017. Because then we knew what signs and symptoms to look for," Mr Tout said.

The veterinary bill was about $70,000 in the initial year, after they chose to test the blood of every cow in the herd. Mr Tout said he made a conservative estimate that $350,000 worth of cattle died.

A full line of the highest performing genomically tested cow family was lost to the disease. "You don't get them back," he said.

Lardner's Rob Marshall saw 10 per cent of his 320-head self-replacing Friesian dairy herd affected by Theileria.

Jenni and Rob Marshall lost 10 per cent of their herd to Theileria disease.

Fortunately, after the first two cows died, he contacted his local veterinarian who was quick to test for and confirm the disease.

"We had cows getting sick. They were about four-to-six-weeks post-calving," Mr Marshall said.

"They went from peak production to, for those that survived, being a dry cow by the next day. Within 36 hours of infection, a good cow will become a skinny cow. They are lethargic and don't want to move."

In all, 32 cows were infected in his herd and six cows died over a period of six months.

There hasn't been a recurrence of the disease since the initial outbreak in 2015.

But milk production dropped by 20 per cent — peak production is 1.8 million litres — and the dry cows had to be carried through until the next joining. D

Buparvaquone use examined in study

A 2012-2013 study (B.AHE.0194) funded by Meat & Livestock Australia, the Australian government and NSW Department of Primary Industries, focused on the effective treatment of bovine aneamia caused by *Theileria Orientalis*. The report's executive summary follows:

There is no remedy registered for use against bovine anaemia in Australia. Veterinarians who have treated cattle with remedies registered for other uses in Australia report variable outcomes.

To date, controls have not been included so it is not possible to determine with certainty the effectiveness of treatments.

Based on literature searches, Buparvaquone (BPQ) is expected to be a highly effective chemotherapeutic, which is supported by efficacy studies (MLA project B.AHE.0048). A US study in 2009, concluded a single deep intramuscular dose of 2.5 milligrams/kilogram Buparvaquone was effective in treating cattle infected with Theileria <https://www.ncbi.nlm.nih.gov/pubmed/19156603>.

A 1989 experiment in Egypt, suggested treatment using Buparvaquone of dairy cattle chronically infected with Theileria may have the dual beneficial effect of reducing the pathogenic effects of Theileriosis, permitting restoration of an impaired immune system and increasing resistance to other infections <https://www.ncbi.nlm.nih.gov/pubmed/2617675>.

Manufacturers have indicated that the projected size of the market does not warrant the costs associated with registration of Buparvaquone (BPQ) in Australia.

It has been suggested veterinarians could apply to the Australian Pesticides and Veterinary Medicines Authority (APVMA) for consent to import an unregistered veterinary chemical product. If a permit was granted, the veterinarian would accept responsibility for residue violations.

As the major overseas markets have not established a Maximum Residue Level (MRL), detection of any BPQ or metabolites would be regarded as a violation and have serious ramifications for the veterinarian and for the Australian cattle industry. A withholding period of 42 days was recommended by manufacturers of BPQ sold in overseas markets, based on methodologies available in the late 1970s.

Technological advances can be expected to have lowered detection limits since then.

This project involved conducting a tissue residue depletion study. Cattle in store condition were treated with BPQ two times, 48 hours apart, at the recommended dose (2.5 mg/kg high up on the neck with a maximum of 10 millilitres per injection site). Seventy-two cattle were treated, which allowed for 12 sampling times, with six animals sampled each time. The animals were housed outdoors before and after treatment in accordance with normal agricultural practice. Two untreated control cattle were also included.

Animals were managed in accordance with the Animal Research Authority. Tissues (injection site neck muscle, skeletal muscle, liver, kidney, subcutaneous fat and peri-renal fat) were collected at days 7, 14, 28, 42, 56, 70, 84, 98, 119, 147, 175, and 203 after treatment. Samples were chilled following collection and placed in a freezer (-20^{0}C) within five to six hours of collection. Samples were held frozen until tested.

Buparvaquone residues were determined according to the method, "Determination of Buparvaquone Residues in Bovine Tissues and Milk by HPLC/MS/MS," (see MLA project B.AHE.0078). Quantifiable residues of BPQ (>0.01 mg/kg) were found in all of the supplied tissue samples collected seven days after treatment (DAT).

The full report is available at <https://www.mla.com.au/Research-and-development/Search-RD-reports/final-report-details/Animal-Health-and-Biosecurity/Buparvaquone-tissue-residue-study/170#>.

May 16-18 Casino, NSW	**Primex** Phone: (02) 6768 5800 Email: <primex@fairfaxmedia.com.au> Website: <www.primex.net.au>
May 16 Northcliffe, WA	**Western Dairy Dairy Innovation Day, dinner and farm tour** Contact: Esther Price Phone: 0418 931 93 Email: <esther@westerndairy.com.au> Website: <http://www.westerndairy.com.au/>
May 19-21 Lexington, Kentucky, US	**Alltech One 19 Conference** Website: <http://one.alltech.com/>
June 4-6 Toowoomba, Qld	**Farmfest** Contact: Fairfax Rural Events Phone: (02) 6768 5800 Email: <farmfest@fairfaxmedia.com.au> Website: <http://www.farmfest.com.au/>
June 12-15 Hamilton, NZ	**New Zealand National Agricultural Fieldays** Phone: +64 7 843 4499 Website: <www.fieldays.co.nz>
June 19 Mt Gambier, SA	**DairySA Innovation Day** Contact: Kylie Boston Phone: 0407 231 547 Email: <kylie@dairysa.com.au> Website: <http://www.dairysa.com.au/>
July 2-4 Bendigo, Vic	**Victorian Winter Fair** Contact: Clare Modra Phone: (03) 5487 1127 Email: <victorianwinterfair@gmail.com> Website: <www.facebook.com/victorianwinterfair/>
July 10-11 Bega, NSW	**Dairy Research Foundation Symposium** Phone: (02) 4655 0631 Website: <http://sydney.edu.au/vetscience/foundations/drf/symposium/>
July 16-18 Creswick, Vic	**Grassland Society of Southern Australia Annual Conference** Phone: 1300 137 550 Email: <office@grasslands.org.au> Website: <www.grasslands.org.au>
July 29-31 Hunter Valley, NSW	**Australian National Fodder Conference** Phone: (03) 9670 0523 Website: <www.afia.org.au/>
August 9-18 Brisbane, Qld	**Ekka** Phone: (07) 3852 3900 Email: <enquiries@ekka.com.au> Website: <www.ekka.com.au>
August 30-September 9 Adelaide, SA	**Royal Adelaide Show** Website: <https://theshow.com.au/>
September 25-29 Wagga, NSW	**Australian Society of Agronomy conference** Email: <office@agronomyaustralia.org.au> Website: <http://www.agronomyaustralia.org>
October 1-3 Elmore, Vic	**Elmore and District Machinery Field Days** Phone: (03) 5432 6176 Email: <info@elmorefielddays.com.au> Website: <www.elmorefielddays.com.au>
November 11-13 Brisbane, Qld	**TropAg2019** Phone: (07) 3848 2100 Email: <tropag2019@expertevents.com.au> Website: <http://tropagconference.org/>

DairySA Innovation Day to address forage for the future

IN today's dairy landscape, dairy farmers are on a continual quest for enhancing milk production and increasing profit — but it's not as simple as it sounds.

The 17th annual DairySA Innovation Day to be held at Mt Gambier, SA, in June promises a motivating line-up of speakers who are set to offer insights into new approaches to managing agronomy and nutrition. Delegates will hear how new findings on increasing pasture — while designed to ultimately increase profit — may also present potential challenges.

Keynote speaker, US-based Professor Santiago Utsumi, will examine how better-informed grazing management can ultimately increase profit for the farm business, citing leading edge precision dairy and grazing technologies including robotics, sensors and acoustics that can assist in making this happen. A panel discussion will question the effects that this 'new frontier' of an increase in pasture will have on milk quality, essential elements, grazing rotation and the environment.

Now based at Ellinbank, Vic, Australia's leading dairy research facility, researcher Rodrigo Albornoz will expand on his recent study and efforts in the US and explain advances in nutrition that will get farmers thinking differently about the what, how and when of diets, for recently calved cows.

How do farmers get grazing cows to eat well and rapidly post calving? And what's the connection between good early lactation milk production and good reproductive outcomes? In essence, what can cows be fed in the first 100 days to increase their performance?

Delegates are invited to join the relaxed conference dinner with guest speaker, beef producer Noel Ogilvie from the Ogilvie Group and explore the day's presentations through conversations with friends, farmers and the broader industry.

The DairySA Innovation Day 2019 will be held on Wednesday, June 19, from 9.30am at The Barn, Mt Gambier. To register head to Eventbrite <https://2019-dsa-innovationday.eventbrite.com.au>.

Down the rabbit hole of dairy fertility

By **Ee Cheng Ooi***

Key points

- ✔ Fertility became major issue in dairy herds in 1990s, in part due to selection for higher production
- ✔ Fertility ABV released to help reverse this
- ✔ InCalf program developed to improve management

AFTER a year writing columns for the *Australian Dairyfarmer*, I'm yet to touch on the topic that's closest to my heart. I'm talking about dairy fertility. This is partly because it's so complicated — too complicated for a single article.

But with the forbearance of my readers (and editor), I'd like to indulge in a series focused on herd reproductive performance, covering the history of our fertility issues, genetic improvement, management of reproduction and the interplay between fertility and data. Hold onto your hats, friends — it's going to be a wild ride.

In the late 20th century, farmers all around the world focused on increasing milk production through two mechanisms — by feeding and by breeding. They were wildly successful. In 1989, the average annual milk production per cow was 2848 litres in Australia. In 2017, this rose to 6070 litres — more than doubling in just 28 years.

Unfortunately, it wasn't until the 1990s that farmers noticed that their herds had a worsening fertility issue. This isn't surprising — unlike grass, which will (hopefully) visibly grow within a week if you throw urea on it, it can take months or even years to see a response to change in reproduction. The second problem is that there are so many environmental factors that influence fertility, it's easy to dismiss a blip in one year or two, especially if you're not collecting data or keeping an eye on historic trends.

As time passed, farmer concerns grew. In response, the Dairy Research and Development Corporation (now Dairy Australia) commissioned what is now known as the InCalf study, confirming that fertility in the national dairy herd was declining. Although the exact causes are somewhat controversial, the decline has been implicated as an unintended consequence of single-trait selection for milk production.

This doesn't mean that high production directly causes infertility. There are high-producing dairy cows that are able to get in-calf without issue. However, it has been proven that there is a negative genetic correlation between the two traits, which means that selecting for one without considering the other leads, over time, to poor reproductive outcomes.

I should add that there are other contributing management, environmental, physiological and genetic factors, but let's not get too far into these things for now.

'A move to split calving in response to poor fertility is logical. However, if this has had a negative impact on profitability, then that's not good.'

Once confirmed, the second question became: what could be done about this?

Firstly, farmers needed a way of assessing fertility when picking artificial insemination bulls. To do this, geneticists devised a measurement for the inherent fertility of a bull's daughters — not an easy thing to do. This resulted in the creation of the Daughter Fertility Australian Breeding Value in 2003, with an improved multi-trait version released in 2013. We'll talk about this in further detail in the next column.

Secondly, genetic improvement is slow and incremental — so a shorter term solution needed to be pursued. The InCalf extension program helps farmers improve fertility using management changes. Eight key management areas have been identified that influence overall herd performance, including: calving pattern, heifer management, heat detection, body condition and nutrition, transition cow management and health, AI technique, genetic selection and bull management.

Unfortunately, like pretty much everything in farming, being good at one or two of these things isn't enough — and yet, trying to improve everything at the same time is impossible. We'll talk about diagnosing a fertility issue and how to prioritise your focus more in later articles.

Thirdly, and unofficially, farmers changed the way they farm. According to the NatSCAN reproductive database, in 1997, 86 per cent of the herds were seasonal calving, with 8pc split and 6pc year-round. In 2016, this had changed to 30pc seasonal, 47pc split and 22pc year-round herds. NatSCAN is a sample of the national dairy herd — not all farms are included in it. However, it is one of the best reproductive datasets we've got.

It's no surprise that farmers are great at adapting to changing situations — and a move to split calving in response to poor fertility is logical. However, if this has had a negative impact on profitability, then that's not good. It also doesn't stop a downward decline in fertility — if anything, it makes it worse, because a cow with poor fertility can be carried over multiple seasons until its gives birth to another cow with poor fertility.

Split calving also makes it easy to slide a fertility issue on the backburner, because it hides the impact that poor reproductive performance can have on a system — on cow longevity and involuntary culling, on fewer cows at peak production, a mismatch between peak production and pasture growth, on lower genetic gain, and the cost of rearing replacements.

There are plenty of split calving farms with good-enough reproductive performance who are happy with their system, but farmers who are dissatisfied with their herd's fertility might be interested in taking steps to improve it.

If this sounds like you, then follow me down the rabbit hole in future issues as we explore the fascinating world of dairy fertility. D

*Ee Cheng Ooi is a cattle veterinarian and fertility researchers working with the animal health team at Dairy Australia.*All comments and information discussed in this article are intended to be of a general nature only. Please consult the farm's vet for herd health advice, protocols and/or treatments that are tailored to a herd's particular needs.*

DataGene
Solutions for Herd Development

Breeding made easier with bull app

Key points

- ✔ Crossbreeding — Holsteins, Jerseys and Swedish Reds
- ✔ Use Good Bulls app to identify sires from all breeds
- ✔ Look for different characteristics in each breed

DEVELOPING a herd of equal stature has meant some careful breeding decisions for the Hill family. The dairy farmers from South Riana in Tasmania inherited a crossbred herd when they purchased their farm five years ago.

For the business — which includes Brodie, his brother James, their parents Craig and Heather and worker Kwai — size does matter when it comes to limiting cow competition within the herd.

They use Holstein, Jersey and Swedish Red genetics selectively, to build a uniform herd, targeting 500 kilograms liveweight, and make breeding decisions based on individual cows. "We are essentially a three-way-cross but with each breed we are chasing certain characteristics," Brodie said.

He uses DataGene's Good Bulls App to search for bulls with the traits he is looking for in each breed. "For example, strength for Jerseys, stature and milk components," he said. "With Holsteins we quite frequently go for fertility, udders, feet and calving ease. With the Swedish Reds, at the moment, we are only using a bull called V.Foske, we are into the fourth year of using him."

The Good Bulls App enables the Hills to make their own breeding decisions. They set filters within the app based on certain traits and the app provides a list of bulls fitting their criteria.

Operating a three-way-cross breeding program means every decision must be calculated. For example, calving ease is a huge factor in selecting Holstein sires. "We never select Holsteins with a potentially hard calving because they go over the Jerseys or the smaller animals," Brodie said. "Fertility is also a big one with Holsteins, we discount anything that is worse than average — straight away — when it comes to fertility."

Brodie said the app allowed them to compare sires on the same measure. "You get an unbiased opinion of what we want, especially with stature and components," he said.

James Hill, Kwai Wells, Brodie Hill and Heather Hill use the Good Bulls App for their bull selections.

Impartial information helps the Hill family make more informed decisions, a lot easier. "If we have the catalogues in front of us, they might say (a sire) has big stature but that doesn't matter because it might not be comparable (if there is no Australian information)," Brodie said. "For example, is it a big stature in New Zealand or Australia?

"The app gives us more confidence knowing we are making the right selection. Also, when a bull company representative comes around, we can have a more informed conversation. For example, you can say 'I've noticed a bull compares like this,' it improves the conversation."

Bull selection is done on the day of joining via the app. "Every large Holstein gets a Jersey, it's just what type of Jersey they get," Brodie said. "All larger framed Jerseys and smaller framed Holstein typically get a red. The smaller framed Jerseys, cross-breeds or Reds will get a Holstein to ensure size is put back into the progeny."

Apart from developing an even-sized herd, the Hills remain focused on building cow numbers. They currently milk 450 across a 180-hectare milking platform. Their business aim is to get to 550-600 cows through increased irrigation development and using run-off areas for the milking herd. Every year they have increased their herd by 50-60 cows. This means they have kept as many heifers as replacements as possible and been mindful of breeding for longevity.

In-house milk monitors provide an insight into daily production and the family usually herd tested two-to-three times a year. Currently the herd produces 480-500kg of milk solids a lactation from a pasture-based diet with 1.2-1.5 tonnes a year tonne of grain/cow/lactation.

The Hills previously milked pedigree Holsteins, before Craig and Heather initially retired. It was only when they bought this farm that they started crossbreeding. The herd came with the farm and had everything from "tiny little Jerseys to, huge big Holsteins", Brodie said. They have since embraced crossbreeding for its fertility but also the cows' ability to handle the harsh north-west Tasmanian weather.

"Because of our higher altitude, it can snow in August," Brodie said. Friends suggested they use Swedish Reds because "if the weather was nasty, they were still out grazing". "Overtime, the crossbreds have been heartier and aggressive to feed, and they hold condition a bit better," Brodie said.

Calving is seasonal (spring) with joining to artificial insemination for six weeks followed by bulls for three weeks. Heifers entered the herd 10 days earlier this year; traditionally it's one-to-two weeks earlier.

Into the future, they want to artificially inseminate all heifers and then the main herd for only three to four weeks. The remaining animals will be joined to beef. This has driven the focus on breeding for fertility. This year the herd recorded a conception rate of about 82 per cent to artificial insemination. D

The impact of feeding decisions

Key points

- ✔ Fully feed fewer animals
- ✔ Reduce impact of feeding decisions in the later years

WHILE it is important to provide optimum nutrition to stock for growth, pregnancy and milk production, this year it may be tempting to cut corners and feed less to the herd. In a feed shortage, it is better to fully feed fewer animals rather than feed a larger herd at restricted levels of intake.

Regardless of the stock type, underfeeding animals only transfers the problem into the following season. Reducing feed to young stock will likely cost more in the long run. In addition, compromising on dry cow feeding will strip condition off these cows and will result in more empty cows after breeding.

'Regardless of the stock type, underfeeding animals only transfers the problem into the following season.'

Feed budgeting

TO plan a feed budget, the first question is how much feed actually needs to be bought to meet milk production requirements. There are a number of feed budgeting methods and tools available (paper and software based) and many dairy advisers who can readily assist. For more information on feed budgeting go to <www.dairyaustralia.com.au/feed>. The Back of the Envelope Feed Budgeting factsheet and the Excel-based feed budgeting tool can be found there and freely downloaded.

Class of stock and their feed requirements	You may decide to...	Consider the implications
Calves and heifers **Weaning to 12 months:** Depending on size, this group needs 40-80 megajoules of metabolisable energy (ME) , 15-17 per cent Crude Protein (CP). **12 months to calving:** Depending on size, this group needs 80-100MJ ME, 13-15pc CP. 	Go for free choice palm kernel extract (PKE) meal and keep the grain/concentrate up to them.	This diet is likely to be nutritionally unbalanced and too low in effective fibre for healthy rumen function unless long fibre sources are also fed.
	Accept a lower growth rate just for this year, assuming they will compensate down the track.	Smaller heifers will produce less milk this year and in years to come. They are also far less likely to get back in calf during their first lactation, and therefore are more likely to be culled. This may have big financial implications for several years as these animals move through the milking herd.
	Rear a smaller number of better quality animals.	
Bulls (700kg, no liveweight change) This group needs about 80 MJ ME, 12pc CP. 	Worry about them later.	Don't forget these guys. More empty cows are likely if the bulls aren't kept in good body condition. This may result in the effects of a poor season this year also being felt next year, which should always be avoided.
	Reduce bull numbers to save on feed and use more AI strategically for replacements.	This will increase the overall cost of AI but removes the risk of infertile bulls due to poor nutrition. Use cheaper semen on cows not earmarked for breeding replacements. Remember more resources will be required for heat detection if using less bulls.
Dry cows (550kg, no liveweight change). This group needs about 90-100 MJ ME, 11-12pc CP. 	Feed them a little less than normal and allow them to strip off some body condition before calving.	About 35 MJ ME needs to be fed to put on a kg of bodyweight, but only 28 MJ ME comes back when the cow mobilises it. That's like paying a 20pc 'interest rate'. Cows in poorer body condition at calving will have low body reserves and take longer to get back into positive nutrient balance. These cows will be at increased risk of metabolic problems (e.g. milk fever, ketosis) and mastitis, produce less milk and have poorer in-calf rates, at a time when optimal health, milk production and fertility are essential.
	Not worry too much about their transition feeding management in the 2-3 weeks before calving.	Poor transition management will result in even greater metabolic problems in fresh/early lactation cows, higher risk of acidosis and displaced abomasums, and even greater impacts on milk production and fertility.
	Both of the above strategies run the risk of dragging a problem this season into next year and even further down the track. A large rise in empty cows can throw a well-tuned farm system off course for several seasons and should always be avoided. In a tough season, try to "limit the damage to one year".	
Milkers Cows in early lactation (550kg, 30 litres, 3.8pc fat, 3.2pc protein, -0.2kg per day) This group needs about 220 MJ ME*, 16-18% CP	Increase energy intake of early lactation cows by offering more grain/concentrate in the dairy.	Cows' rumens may not be adapted to handle that much grain/concentrate, and the risk of acidosis will be increased. Smaller cows and first calvers are at greatest risk. Monitor these animals closely and ensure they have equal access to feed.
	Use silage supplies to feed this group.	

	Place cows in a sacrifice paddock to feed grain/ concentrates and other supplements, in order to slow the paddock rotation and build a pasture feed wedge.	Effective fibre levels and total energy intakes may not be sufficient to maintain production and prevent body condition loss while the pasture feed wedge is being built. Ensure diet and daily feeding rate are adequate.
	Put cows into paddocks before pasture has reached the 3-leaf stage.	Pasture still at the 1-2 leaf stage will provide cows with less neutral detergent fibre and less effective fibre. The pasture will take longer to recover from grazing and less feed will be grown. Make sure pasture is an absolute minimum of 2 leaves before grazing.
Cows in mid lactation (550kg, 25 litres, 4pc fat, 3.4pc protein, +0.1kg per day) This group needs about 200 MJ ME*, 14-16pc CP. 	Give cows sudden, unrestricted access to young, lush pastures or forage crops.	Risk of nitrate poisoning. Avoid feeding high-risk plants to hungry cows. Delay feeding until plants are more mature. Dilute high-risk plants with hay or other low-nitrate forages.
	Buy hay from other regions.	Risk of introducing weeds to the property. Buy feeds from reliable sources and feed all hay out in one designated paddock if possible. Remove any weeds before they set seed.
	Use high fibre by-products where the history of agchemical use is unknown.	Risk of chemical residues. Buy feeds with a Commodity Vendor Declaration. Introduce new feeds gradually. Feed in limited proportions of the diet e.g. less than 20pc.
Cows in late lactation (550kg, 19 litres, 4.2pc fat, 3.6pc protein, +0.1 kg per day) This group needs about 180 MJ ME*, 12-14pc CP. 	Accept a lower body condition score target at dry-off.	Milk production and in-calf rate will suffer next lactation unless body condition is made up during the dry period. The cow is more efficient at converting feed into body condition while it is still milking than when it is dry.
	Dry the cows off a bit early to save feed.	Drying cows off early will mean less milk income to pay for the feed they need. However, if cows are doing less than 10 litres/day and/or are have a low body condition score (less than 4.5), they can benefit from a longer dry period.
	Milk mid-late lactation cows once a day.	OAD milking of under-conditioned cows in late lactation will help these animals to recover some condition before dry-off.
*Additional energy may be required for walking activity and to cope with adverse weather conditions.		

Feed budgeting critical this winter

FEED budgeting is ensuring Gippsland dairy farmer Hans van Wees is confident about his feed situation this winter and spring. Mr van Wees operates a pasture-based dairy system in the Macalister Irrigation District, Gippsland, Victoria.

The 845 self-replacing spring-calving herd is on target to produce 530 kilograms of milk solids (MS) per cow this season, milked twice-a-day.

The 50-rotary dairy servicing the herd is supported by 200 hectares of milking area and 200ha of support country, within 330ha of flood-irrigated farmland.

A 400 megalitre groundwater licence is supported by 1200-1300ML high reliability water right from Glenmaggie Weir and diversion licences for 35ha of country.

A re-use dam ensures 95 per cent of the milking platform uses recyclable water; and effluent is spread over 100ha of the milking platform, in every second irrigation.

All hay and silage fed to the herd is made on farm. About 1.2 tonnes/cow of silage and hay — mostly pasture silage — is fed annually.

"In spring, we try to offer cows 20 to 25kg DM in spring. Dry cows require concentrates of 120 MJ ME (megajoules of metabolisable energy) and spring calvers 140 MJ ME," he said.

Mr van Wees said he used a 'traditional' feed budget that tracked what pasture growth could be expected on average (including nitrogen boost) and total supplements available versus animal demand generated for milking and dry stock.

Autumn and winter were two important times for a feed budget because this planned out how the current season will be completed and sets up for the new season, he said.

"At this stage of the year we obviously have silage on hand but even with 600 tonnes DM carry over, we have calculated a shortfall of 250-300 tonnes of dry matter during winter to spring," Mr van Wees said.

"We are using almond hulls to make up for where we are short and we are feeding 1kg/cow at the moment. Almond hulls work well for us and we have had no problems. Cows love them.

"This is the third year of drought in this region and everyone is waiting to see what will happen with autumn. Also the last couple of dry seasons we have purchased about 300 tonnes of hay to make up shortfall. In addition to the almond hulls, to bridge the feed gap, we are currently actively looking for a grain contract and we are looking right through to December 1."

Hans van Wees: Farm is using almond hulls to help supplement cows. Picture courtesy of *Gippsland Times*

Mr van Wees said despite the current higher grain prices he would rather ensure that he had a feed supply secured at this time.

"I'd rather know that I have it and then I can budget accordingly than not have it all," he said.

Dairy Australia
Your Levy at Work

Better fertility practices lift profit

Key points

- ✔ Tas dairy farmer ceased induction seven years ago
- ✔ Focus on improved fertility management
- ✔ Better outcomes for herd

DAIRY farmers are driving profitability and improving animal health by embracing best practice for fertility management.

As the Australian dairy industry works toward achieving its targets for the complete phase out of calving induction, dairy farmers are already ahead of schedule when it comes to reducing their reliance on induction.

While the industry first committed to phasing out calving induction in 2015, new targets have now been set to reduce calving induction to 8 per cent in 2019, 6 per cent in 2020 and 5 per cent in 2021, before completely phasing out the practice by 2022.

The new targets were set by the industry as farmers demonstrated their commitment and tangible progress in reducing the practice on-farm.

For many farmers, ceasing to use calving induction produces good outcomes for their herd by reducing wastage and improving animal health, welfare and performance.

Tasmanian dairy farmer Stuart Burr has gone seven years without using calving induction on his farm at Ringarooma in north-eastern Tasmania.

Mr Burr began share-farming in 2008, and was motivated to increase his wealth by growing his asset base through improving the reproductive performance of his stock.

The farm business is still in a growth phase, with the effective milking area on the farm having grown from 120 hectares to 180ha in a single year.

The herd size has increased from 350 cows to 410, and Mr Burr has set a goal to milk 500 cows by the end of 2019.

Despite being aided by a large allocation of reliable irrigation water, Mr Burr believes his farm is best suited to a single seasonal calving pattern.

His theory is supported by a thorough history of pasture growth records that he has kept by conducting a weekly farm walk to measure pasture density.

Tasmanian dairy farmer Stuart Burr phased out calving induction on his farm seven years ago.

'We consider it a waste to induce calving — you waste your opportunity to have a calf.'

Now in his eighth year since phasing out calving induction, Mr Burr said he simply did not like inducing calves.

"We consider it a waste to induce calving — you waste your opportunity to have a calf," he said.

"Cows that are not induced produce more milk. By not inducing, your calves and cows are healthier, your cows milk better, they're not as stressed, and they get in-calf more easily."

Mr Burr was able to phase out calving induction on his farm by taking advantage of best practice calving techniques, and by attending Dairy Australia's InCharge fertility workshops, available through Regional Development Programs.

"This program helped me improve the whole system and our breeding strategy to get better results," he said.

While initially using induction to condense his calving pattern, Mr Burr said he believed this practice did not make his farm more profitable.

"Inductions only mask the problem — they don't fix the problem," he said. "The real problem is getting cows in-calf early."

Mr Burr's fertility program is now focused on earlier in-calf rates through a more targeted breeding program and a shortened timeframe, which has driven better outcomes for the herd.

"We've gone pretty hard on our mating period to breed better animals," Mr Burr said. "We only mated for three weeks and three days this year with our heifers, and only seven weeks with our cows." D

Dairy farmers can access a range of resources to improve their herd's reproductive performance through Dairy Australia at <dairyaustralia.com.au/calvinginduction>.

Dairy Australia
Your Levy at Work

How to build a team

Key points

- ✔ A strong work ethic
- ✔ Excellent communication
- ✔ Good guidelines and work procedures
- ✔ Attention to detail
- ✔ Careful planning

THERE'S no greater asset to a dairy business than a high performing team, says 2019 Tasmanian share farmers of the year Damien and Brooke Cocker. Mr Cocker said managing a team was all about applying and sharing knowledge with people and recognising their valuable contribution. They also have a 'leading by example' philosophy that underpins their management style.

The Cockers share farm in the far north east of Tasmania on Rushy Lagoon, one of Tasmania's largest dairy farms.

They operate two of the four dairy farms on a cents per kilogram of milk solids payment arrangement and have recently purchased their own dairy farm.

They have three daughters under the age of eight and juggle the demands of their family commitments with running their large share farming business.

"I just love dairy farming because you get to spend so much time with your family," Mr Cocker said. "The kids are at school now but I could spend breakfast, lunch and dinner with them when they were younger. I just love if for that family environment aspect."

Rushy Lagoon spans almost 21,000 hectares, including 14,000ha of grazing country, and milks 2500 dairy cows alongside all dairy young stock and 7000 beef cattle. The area receives an average rainfall of 750 millimetres per year and has developed 1000ha of irrigated area.

The Cockers employ five full-time employees and have a staff-cow ratio of 228 cows/FTE (full-time equivalent).

Mr Cocker said everyone was given the opportunity to take on additional training and as a result, one employee had progressed through a farm apprenticeship to becoming a share farmer for the Rushy Lagoon operation. Quad bike training was compulsory with additional training and discussion groups optional.

"If you are motivated and passionate about dairy farming as an employee you are half way there," Mr Cocker said.

"There are lots of positives for newcomers to dairy. There's Discussion Groups and Dairy Australia courses like Cups on Cups off. The way we look at it is we may lose some of these people from our business but it's about helping them build a career and how as employers we can help them to fulfil their potential over time in their roles."

Staff rosters are drawn up well in advance so that all staff can plan ahead. The Cockers run a seven-days-on three-off roster although in the past they were on a 10-days-on four-off roster. This change came out of feedback from the team.

"We discussed it as a group and the feedback was that the team can get a bit tired toward the end of the 10 days so we changed it," Mr Cocker said. "With three days, you can still have enough time off to do something meaningful and it means that we often have two people on the farm the whole time which is useful."

'If you are motivated and passionate about dairy farming as an employee you are half way there.'

Daily communication and staff contact is supported using farm maps and a large white board in the dairy providing day-to-day instructions. Daily team meetings are held at breakfast following morning milking. A diary recording grazing rotations informs staff of herd and paddock movements.

A team meeting is held when important issues need to be raised such as dealing with high cell counts or identifying cycling cows.

Mr Cocker said having time off was also important and encouraged, outside of any busy times such as AI and calving periods.

In providing a great workplace for his talented workforce, Mr Cocker said he was conscious of leading by example. This means he's there with his staff on small jobs like replacing rubber liners in the dairy, while Mrs Cocker looks after the majority of the calves. When calving time arrives, Mr Cocker also looks after night calving so his team can focus on their core roles during the day.

The 2019 Tasmanian share farmers of the year are Damien and Brooke Cocker.

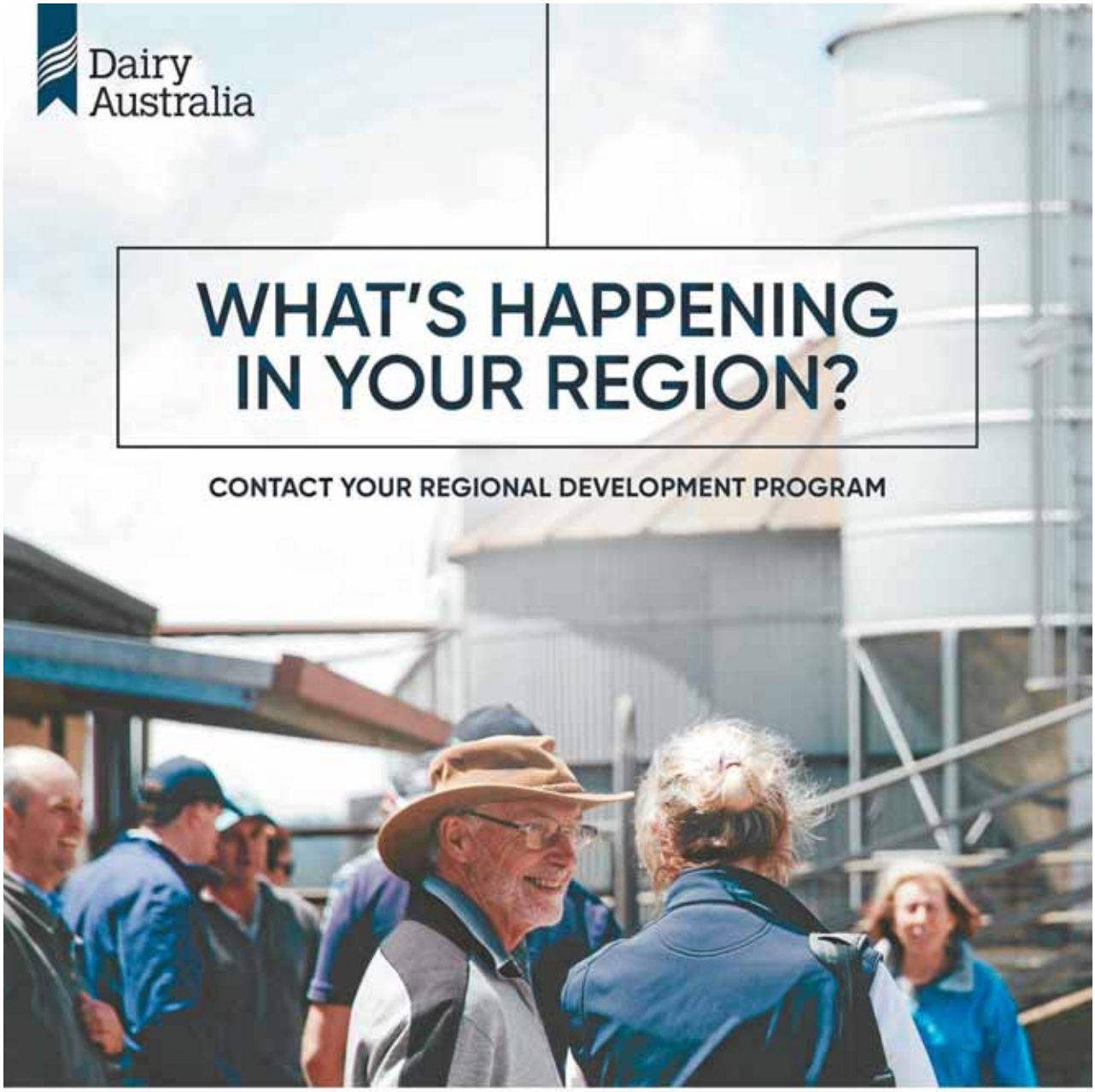
Animal welfare issues, now critical to dairy operations, were also discussed with the team. "I guess for me, any animal welfare decisions are discussed with the team and the 'why' behind it," he said. "Tail docking is a good example, especially for some of the staff who have worked in the industry when tail docking was the norm. I make a point of explaining why we don't do it anymore and the reasoning behind it."

Mr Cocker said reflecting back to his formative years in dairy farming helped to improve both his own and his employees' performance. "I think as a manager having patience is important and remembering at one time, you were in that position of starting out," he said. "Some people take longer than others to learn but they will get there and it's a matter of supporting people and using your experience.

"If there are issues that crop up for example, sleeping in, you can usually find the answer if you ask the right questions. There is usually an underlying issue that can lead to these things and a simple solution can be found.

"Sometimes if you jump on it straight away you just get cranky. It's more constructive to sit back and think about it and talk about what might be done differently next time." D

Visit <www.thepeopleindairy.org.au> for information about employing people, managing teams and share farming.



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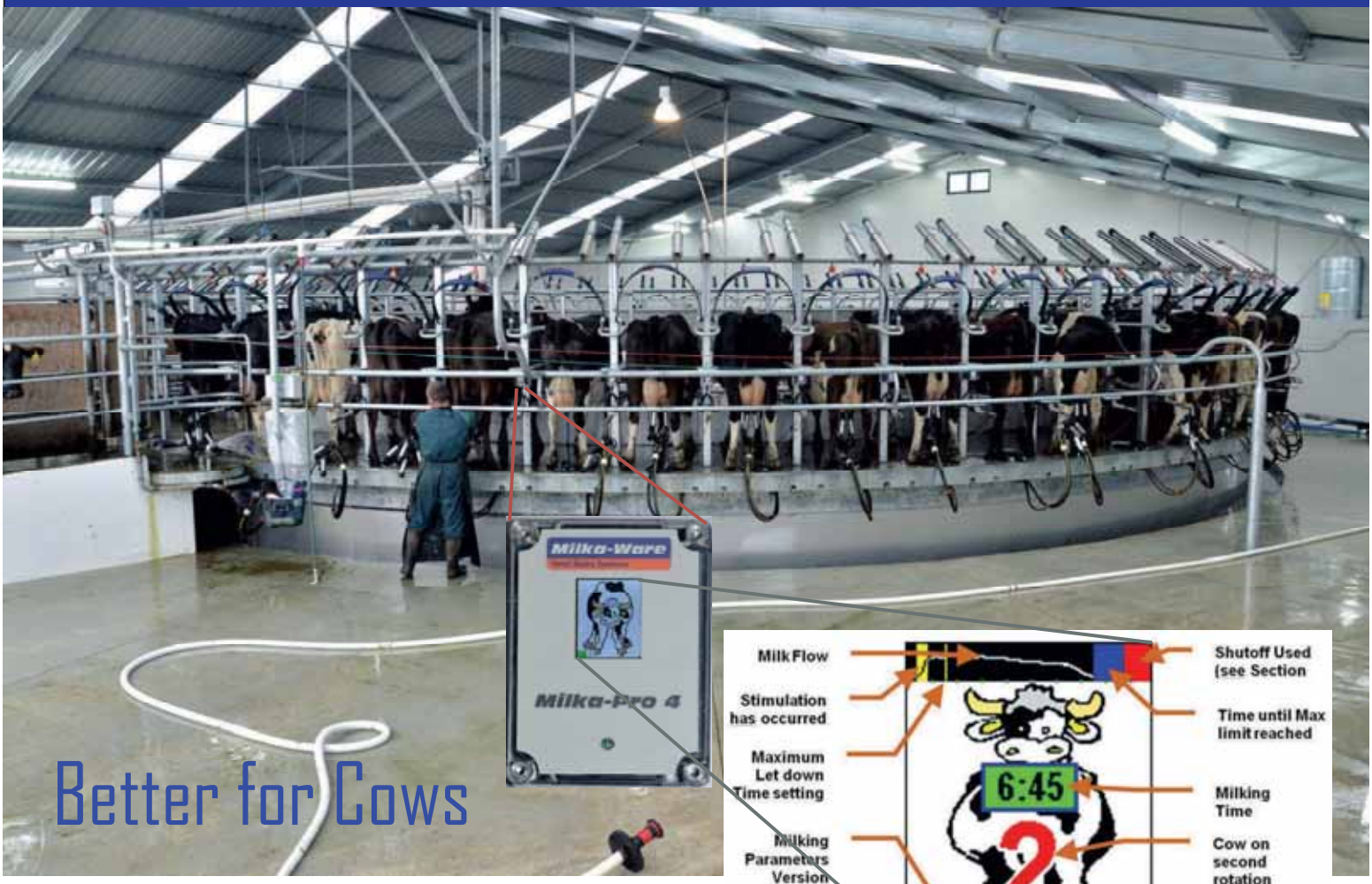

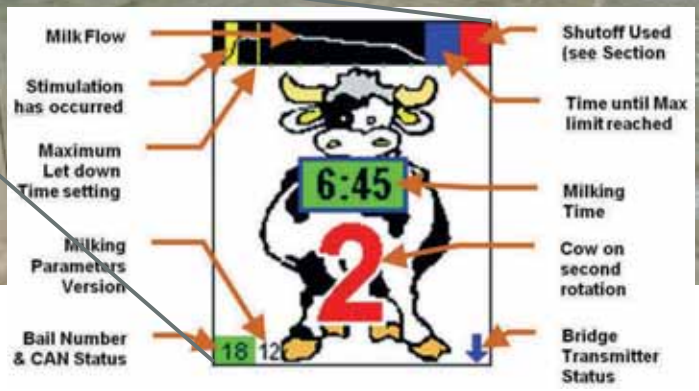

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