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NORTHERN HORIZONS

Subtropical Dairy

Dairy Australia

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BMR Corn

A New Forage Variety Offering Productivity Benefits for Dairy Feeding Systems

Queensland Government

Dairy Australia

4Milk

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Background and Purpose

Forages form the foundation of any successful dairy cow diet. Among the various forage options, corn silage is a particularly suitable choice in intensive dairy systems, especially those employing Total Mixed Ration (TMR) and Partial Mixed Ration (PMR) feeding systems, due to its ability to deliver high dry matter yields per hectare, combined with excellent nutritional quality. Brown Midrib (BMR) corn is a variety distinguished by a characteristic brownish midrib, resulting from a genetic mutation that reduces lignin content in the plants' stalk. Lignin is an indigestible component of the plant cell wall, which increases with plant maturity to stabilise the plant. BMR corn's lower lignin content means the plant is more digestible, potentially leading to better feed intake and enhancing milk production.

Most of the research on BMR corn has focused on the bm3 mutation. Although the bm3 is highly digestible, it has struggled with weaker plant structure, lower yields, and poor drought tolerance, which is a drawback in Australia's subtropical climates. Recognising these challenges, plant breeders have developed a new mutation, bm1, specifically designed to thrive in subtropical Australian environments. The bm1 BMR hybrids have been showing promising results and have been cultivated across a variety of sites in Victoria, New South Wales and Queensland, with heat resistance, disease tolerance, and strong yields, potentially making them well-suited to dairy farms in these regions.

This study presents preliminary findings from a summer 2024/25 study conducted at the Gatton Research Dairy, focusing on the agronomic and nutritional quality assessment of the new BMR corn variety (bm1- CRM 107) compared to conventional corn (variety P 17822- CRM 117).

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BMR Corn | Conventional Corn

Image 1. *Comparison of plants and cobs between BMR corn and conventional corn at 35% dry matter.*

Contents

Northern Horizons Editorial SDP Chair

Welcome to *Northern Horizons*.

As has been the case in past years, in preparing my Chair's address for our 2024/25 annual report provided an opportunity for me to reflect on the past 12 months and the achievements of Subtropical Dairy. 2024/25 saw the continuation of good operating conditions across much of the Subtropical Dairy region. Milk production in Queensland and NSW grew for the second consecutive year, despite national milk production declining due primarily to very dry conditions across southern Australia. Queensland Dairy Accounting Scheme (QDAS) 2023/24 results showed a continuation of the recent trend of improved annual profitability, with Earnings Before Interest and Tax (EBIT) per cow of $895. This follows EBIT per cow results of $986 in 2022/23 and $861 in 2021/22.

During 2024/25, our staff in Subtropical Dairy delivered 69 events to 1,215 participants. This compares with our 2023/24 delivery of 67 events to 1,167 participants. Average participation at each event was 18 which is comparable to the previous financial year. Extension programmes delivered by Subtropical Dairy during 2024/25 included: Understanding Farm Carbon Workshops, Rearing Healthy Calves in Practice, Milking Mastitis Management and Healthy Hooves. We also continued to facilitate our Regional and Discussion groups. Our main communication channels during 2024/25 were the Northern Australian Dairy Hub, Northern Horizons, our Commodity Report and eNews.

Subtropical Dairy also received funding during 2024/25 from the Farm Business Resilience Program, which is co-funded through the Australian Government's Future Drought Fund and the Queensland Government's Drought and Climate Adaptation Program. This funding totalled $138,000 and was critical to Subtropical Dairy maintaining key projects such as the Commodity Report, additional on-farm technical consultancies, group events and collaborating in the North Queensland Dairy Development project.

As we progress down a pathway of reforming how levy funded services are delivered in regions throughout Australia, I often reflect on the unique circumstances our northern Australian dairy industry faces and how these are supported moving forward. Despite considerable investment in RD&E globally, dairying in the tropics and subtropics is still problematic. Highly productive cows are susceptible to heat stress, disease and pests. Tropical forages have inherent characteristics that make them less productive than temperate species. Rainfall patterns are also more extreme. While all these challenges can be addressed, they come with cost and risk. Queensland is also the most disaster impacted state in Australia. Since 2017, 64 of the state's 77 local government areas have been impacted by one or more declared disaster events. Between 1970 and 2019, Queensland and NSW have experienced 74 per cent of the national economic loss due to natural disasters ($52.87 billion). All of these factors need to be considered as we progress through a change process.

Once again, welcome to Northern Horizons and I hope you find this edition of value and interest to your business.

Luke Stock, Chairman,
Subtropical Dairy Programme Ltd.
P 0474 800 245

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Methods and Progress

The research was conducted at the Gatton Research Dairy in Queensland over 1.5 hectares of irrigated land during summer 2024/25. Both hybrids were treated equally. Fertilisation included a pre-planting application of urea at 287 kg/ha and a side-dress at the 5–6 leaf stage with 105.5 kg/ha to support robust growth. Seeds were sown on October 2, 2024, at a rate of 22.6 kg/ha.

The corn rows were spaced 75 cm apart. Irrigation and rainfall combined to provide 460 mm of water over the growing season (100 mm irrigation, 360 mm rainfall). Crop health was monitored weekly, with pest control applied twice for Fall armyworm and Helicoverpa, and one application of herbicide for annual and Johnson grasses, as well as broadleaf weeds.

The BMR corn reached tasselling on November 25th, about 10 days earlier than the conventional corn, which tasselled on December 6th. Both corn types were harvested at around 35% dry matter.

Results

At harvest, both BMR and conventional corn plants exhibited agronomic similarities, characterised by tall stature, large cobs, soft grain kernels, and excellent stay-green characteristics—traits that contribute to strong standability and overall yield (Image 1, page 1). Figure 1 presents the different nutritional composition between the two hybrids.

- **Yield:** BMR corn yielded 23.81 tonnes dry matter (DM) per hectare compared to 27.97 tonnes DM per hectare for conventional corn, marking only a 4% reduction.
- **Starch and Lignin Content:** The starch content in BMR corn was approximately 4% lower than conventional corn. Lignin content was reduced by 18%. This substantial drop in lignin is key to improving forage digestibility.
- **Protein Content:** BMR corn had 11% higher protein content than conventional corn.
- **Digestibility:** The most outstanding benefit was in digestibility. Neutral Detergent Fibre Digestibility (NDFD), a critical measure of how well cows can digest fibre, was 26% higher in BMR corn.

These findings suggest that BMR corn provides a comparable yield and improved nutritional quality, making it a potential forage option. The improved digestibility could lead to better feed efficiency.

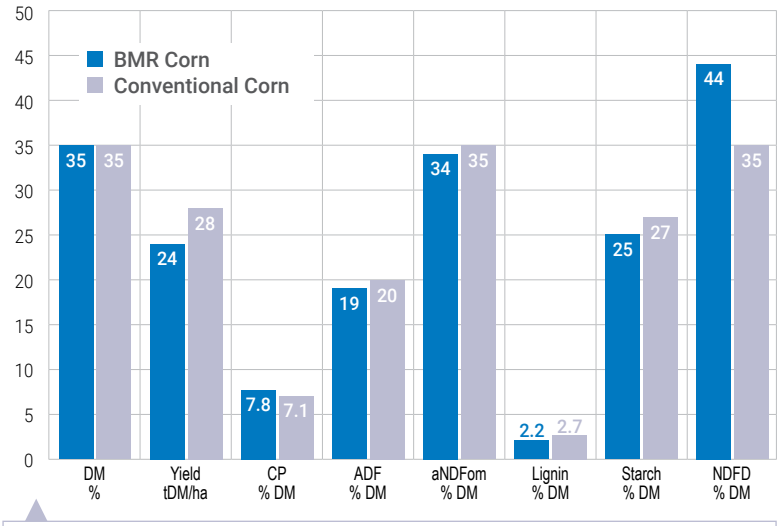

Figure 1. *Yield and nutrient composition of conventional corn and BMR corn harvested at 35% dry matter (DM: dry matter; t: tonnes; CP: crude protein); ADF (acid detergent fibre), aNDF (adjusted neutral detergent fibre); NDFD (neutral detergent fibre digestibility).*

Conclusion

BMR corn (bm1) represents a promising forage option for dairy farmers. Its lower lignin content converts to higher digestibility. While the yield is slightly reduced compared to conventional corn, the quality improvements could more than compensate, especially in systems where feed quality is prioritised. However, it is important to highlight that BMR corn matures faster, around 10 days earlier, due to its shorter comparative relative maturity, which could shorten the harvest window. Timely harvesting is crucial for conserving the best nutritional value and preventing quality losses. Coordinating equipment and contractors accordingly will be crucial to maximising the benefits of this forage variety. Overall, BMR corn provides an exciting opportunity to enhance dairy feeding systems with a forage that supports both cow health and farm productivity.

Key Takeaways

- **Improved Digestibility and Nutritional Value:** BMR corn shows a 26% improvement in fibre digestibility and 11% higher protein content than conventional corn, enhancing feed quality and potentially boosting milk production.
- **Slight Yield Reduction but Better Quality:** Although BMR corn yields around 4% less than conventional hybrids, the trade-off is improved forage quality, making it a valuable option for dairy farms prioritising quality over quantity.
- **Shorter Harvest Window Requires Careful Management:** The faster maturity of BMR corn demands timely harvesting to preserve quality and maximise benefits, highlighting the need for effective scheduling and resource planning.

Image 1: Cory Christopher with his Sile King crop.

Sile King offers another white sorghum silage option

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Department of Primary Industries, Queensland

Sorghum varieties have become the dominant silage source in the subtropical dairying region. This has evolved over the last couple of decades due to erratic weather events, and the increased nutritional skills of dairy farmers which has contributed to the achievement of a higher margin over feed cost through inclusion of sorghum in dairy cow diets. We repeatedly see per cow production of 8,500 - 9,500 litres per lactation from diets based on sorghum silage. Sorghum's resilience to dry weather makes it not only appropriate for use in rain grown crops but also in irrigated systems whereby savings have been made in water consumption leading to reduced electricity and water charges. Corn, whilst still a very good fit in dairy cow rations, is associated with increased risk, higher growing costs and has been adversely impacted by fall armyworm.

The C4 Milk team have investigated a range of forage and grain sorghum varieties, with the most recent being Sile King. This variety was bred by Peter Stuart from Palafor Partners, with the view to providing a white sorghum grain variety with additional forage yield. Last summer saw the most hectares planted to Sile King, from the Darling Downs to the coast. Growing conditions were mostly above median rainfall, with some waterlogging experienced in coastal areas. There were very few second cuts on the coast due to the wet conditions. The season was very testing for all forage crops, including corn.

Each year the Mary Valley and surrounding district farmers come together to discuss silage. Before any feed quality considerations, ensuring enough forage stored is crucial. Last summer's results indicated it is possible to have both tonnes and quality. Table 1 (page 5) outlines the range of results for three grain sorghum varieties (Sile King, Liberty (white) and Sentinel (red)), including yield and some key nutrients. All samples were analysed at Forage Lab Australia. No irrigation was applied last season.

Some key outcomes were the following:

- The highest yielding crop in the Mary Valley was a Sile King crop, it was however, pipped by a single cut Sile King crop in the Brisbane Valley (15.9 t dry matter (DM)/ha, 36.3% DM)
- The Mary Valley Liberty crop was the best the dairy farmer had ever grown. Well done Garry.
- Sentinel red sorghum has found a niche, given it can be sprayed with imidazoline to successfully combat Johnson grass populations. An observation in the Mary Valley is that total tonnes are lower than other grain varieties, but starch is as high or higher.
- Yield was affected by wet weather events. Some crops were cut early, others late. Second cuts of significance were achieved on only two farms with Sile King and Sentinel. Total yield for the two silage cuts were 22.2 t DM/ha Sile King and 17.4 t DM/ha Sentinel.
- A Downs farm contributed to the data set this season. This farm had a strong feed inventory and trialled grain sorghums to lift feed quality. Although it was a drier season inland than on the coast, very acceptable tonnages were still harvested.

Silage costs are important to investigate and compare with other forage options. Costs include growing, harvesting and waste. In 2024/25 the growing and harvesting costs for one Sile King crop in the Mary Valley were $1767/ha, which equated to $180/t DM. No labour costs were included in this calculation, but other expenses were included. No second cut was possible due to the wet weather, however the ratoon crop was grazed.

It has been demonstrated that sorghum silages can have high levels of starch; however, it is also often observed that there are elevated levels of unprocessed grain. This season, with the help of Jordan Minniecon (Lallemand Animal Nutrition), we investigated processing further. On one farm the grain processor was tightened as far as possible, and speed of harvest was slowed a little which resulted in just over 50% of the sorghum grains being cracked at harvest. The C4Milk team is continuing research on starch availability in sorghum silages with more data being published soon.

Variety			Nutrient content (dry matter basis)			
	Dry matter (DM) (%)	Yield (t DM/ha)	Crude protein (%)	NDF (%)	Starch (%)	ME (MJ/kg)
Sile King	25.2 – 34.7	9.4 – 14.6	7.8 – 10.0	41.6 – 49.7	17.2 – 27.3	10.7 – 11.1
Sile King (Mary Valley crop)	32.0	14.6	7.8	44.1	27.2	11.1
Sile King (Darling Downs)	34.0	9.4	7.0	43.0	26.0	11.1
Liberty	27.9 – 32.0	9.8 – 11.6	6.5 – 10.4	44.3 – 45.2	24.1 – 27.2	10.8 – 11.0
Liberty (Darling Downs)	39.9	10.3	6.9	41.3	31.1	11.6
Sentinel	30.5 – 34.5	6.5 – 7.8	7.8 – 9.6	40.9 – 53.8	14.2 – 29.0	9.5 – 11.3

T – tonnes, NDF – neutral detergent fibre, ME – metabolisable energy, MJ - megajoules

Table 1. *Grain sorghum yields and quality results for summer 2024/25.*

Image 2: *Jordan Minniecon (Lallemand Animal Nutrition) with Cory Christopher who was awarded with the Best Silage Crop in the Mary Valley for 2024/25.*

Thank you to all the farmers and Jordan Minniecon who contribute to the data set and discussion every year. Grain sorghum varieties have become widely used as a silage source in the subtropical dairy region. They have provided viable alternatives to corn and forage sorghum varieties. Total yield and forage inventory is certainly the first priority for subtropical dairy farming systems, however, the data is indicating grain sorghums have potential to offer yield, quality silage and extra margin over feed cost.

A full-lactation grazing trial is underway to evaluate grazing management strategies

Dr Marcelo Benvenutti
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Department of Primary Industries, Queensland

Previous research by the Department of Primary Industries (DPI) dairy team has led to the development of a new set of grazing management targets for annual ryegrass and kikuyu (Table 1). This new set of management targets was named PUP (proportion of un-grazed pasture) grazing. A full-lactation grazing trial is underway at Gatton Research Dairy (GRD) to evaluate PUP grazing against the traditional industry grazing management recommendations shown below in Table 1.

	Leaf stage		Pasture utilisation per grazing		Residue management	
	Traditional	PUP	Traditional	PUP	Traditional	PUP
Annual ryegrass	2 ½ to 3 leaves	2 leaves	100% of the pasture mass above 5cm	100% of the top leafy stratum excluding faecal patches	Graze to a residue of 5 cm	Maintain residues at 10 cm using mechanical means or non-lactating animals
Kikuyu	4 ½ leaves	3 ½ leaves	2/3 of the pasture mass above 5cm		Reduce to 5 cm if residues exceed 15 cm	

Table 1

The aim of PUP grazing is to improve milk yield per cow and per hectare through improving pasture intake, diet quality and pasture utilisation. PUP grazing's key principle involves grazing only the top leafy stratum of pastures (TLS) (Images 1 and 2). In practice this is achieved by leaving a small proportion of un-grazed pasture around the faecal patches as an indicator, promoting high intake of higher quality pasture per cow. PUP grazing also utilizes pastures at an earlier stage of maturity in comparison with traditional recommendations. This results in greater leaf yield and higher pasture utilisation per season.

Previous studies conducted by the DPI dairy team found that PUP grazing resulted in greater pasture intake, pasture utilisation and milk yield in comparison with the traditional recommendations. This included a 2-year grazing study on annual ryegrass and kikuyu using non-lactating dairy heifers at the GRD. The study showed that PUP grazing resulted in at least 50% improvement in pasture intake and 30% increase in pasture utilisation per season in comparison with the traditional recommendations for both pasture species. In addition, a short-term study conducted in 2023 at GRD demonstrated that

the PUP grazing strategy increased pasture intake by 52% and short-term milk yield per cow by 18% (5 litres) in comparison with the traditional grazing management recommendations used for annual ryegrass.

The current full-lactation study evaluates the impact of PUP and traditional grazing strategies on milk yield on a per cow and per hectare basis. It will also measure milk composition, body condition score and reproductive performance of each herd (PUP and traditional) being trialled. Both the PUP and traditional grazing strategies will use first-lactation cows to graze annual ryegrass (winter 2025) and kikuyu (summer 2025/2026).

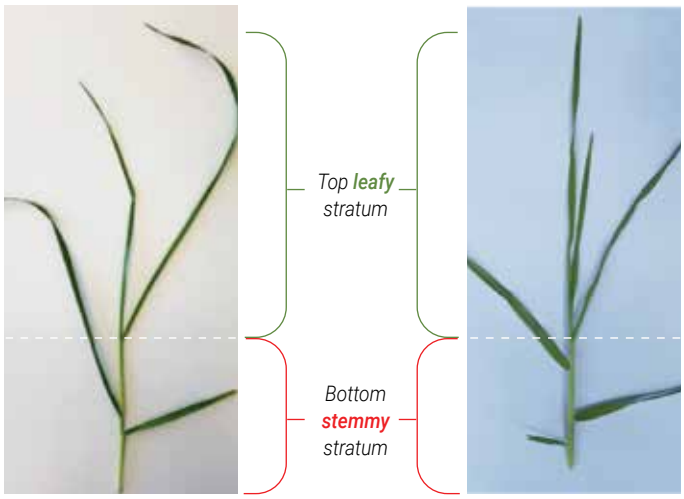


Image 1 *Strata of annual ryegrass (left) and kikuyu (right).*

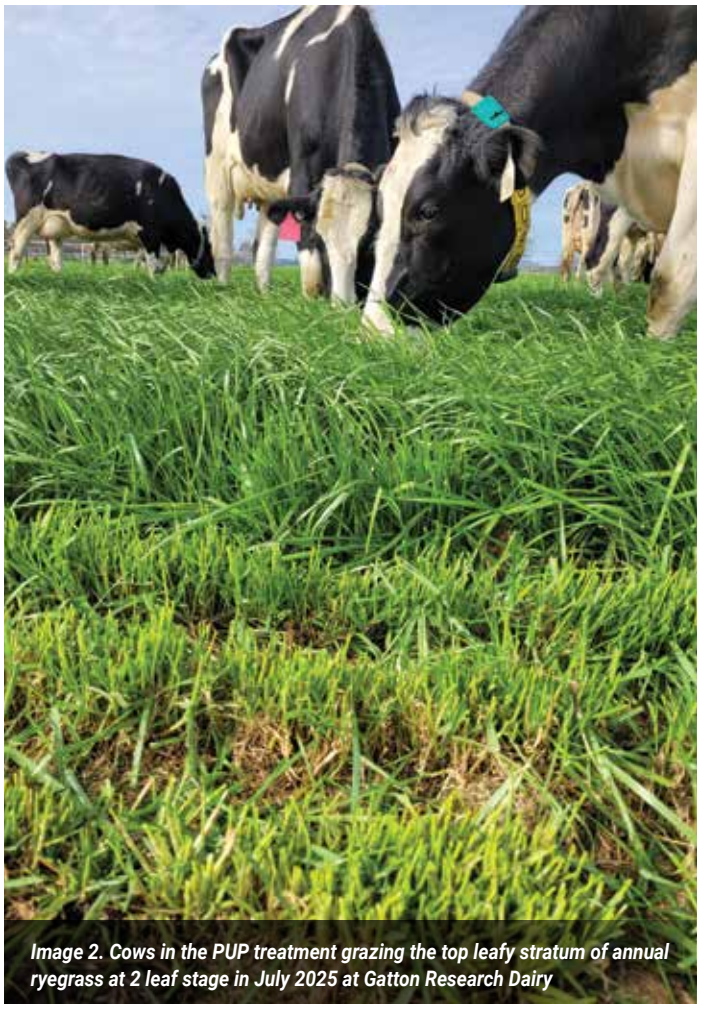


Image 2. Cows in the PUP treatment grazing the top leafy stratum of annual ryegrass at 2 leaf stage in July 2025 at Gatton Research Dairy

NEAR MISS

Jenny's Story and a Lesson in Side-by-Side Safety

Di Gresham
Human Resource Consultant

Jenny and Craig run a dairy farm on undulating country which, like many properties along Australia's east coast this year, has experienced an exceptionally wet season. It was an early winter afternoon when Jenny was bringing the cows home, following behind the herd in the side-by-side vehicle. With the tracks soaked from recent rain, she was anxious about getting bogged. It had already happened once that month, and she was dreading the thought of going back for the tractor yet again.

As she navigated a familiar bend at the end of a paddock, her focus was on a section of track near an embankment leading down to the creek. Normally, the area was wide enough to be safe, but this time the ground conditions had changed. As Jenny turned the corner, the side-by-side suddenly sank into soft earth. She instinctively hit the accelerator to power through, but the burst of speed pushed the vehicle dangerously close to the slope.

In a split second, the front tyre hit a rut and jolted the vehicle. Jenny tried to steer out of it, but the momentum was too much — the side-by-side lost traction and slid sideways down the embankment. Jenny felt a wave of panic rise as the vehicle slid and she had no control. Panic surged. "I remember thinking 'no, no, no, this can't be happening,'" she later recalled. "I was just holding on, I really thought it was going to tip."

Fortunately, the vehicle came to a sudden stop partway down the slope when its side, just behind the driver's seat, collided with a tree, preventing a full rollover. However, Jenny wasn't wearing a seatbelt or helmet. On impact, she was thrown sideways, striking her head against the side roll-over protection bar. She sustained a concussion and a deep gash that required stitches, leaving her incapacitated for several days.

This near-miss is a sobering reminder of how quickly things can go wrong — even on familiar tracks, and at low speeds.

The Safer Alternative?

Since October 2021, changes to Australian laws have required all new quad bikes sold to meet minimum stability standards and be fitted with an Operator Protection Device (OPD). This led many farmers to shift to using side-by-side vehicles (SSVs), which were widely viewed as a safer alternative for day-to-day tasks.

However, in 2024, 14 people were killed on farms while using side-by-side vehicles—up from just four the previous year. For the first time in Australian farm safety reporting, side-by-sides overtook both tractors and quad bikes as the leading cause of on-farm fatalities in a single year.[1]

The sharp increase in fatalities is concerning. While no single explanation exists, several factors may be contributing:

- **Familiarity breeds complacency:** Because side-by-sides are used regularly for everyday tasks, operators can become overly comfortable and begin to underestimate the risks involved.
- **False sense of security:** Cabs, seatbelts, and roll bars can create the illusion of complete safety, which can result in neglecting essential precautions like buckling up, wearing helmets, or adjusting driving to the conditions.
- **Speed and terrain are underestimated:** Despite their sturdy appearance, side-by-sides have a high centre of gravity. This, combined with speed and uneven or sloped terrain, makes them prone to rollovers—similar to quad bikes.
- **Task-focused mindset:** In the rush to get jobs done, safety procedures are often overlooked in favour of speed and convenience.

- **Lack of training or reminders:** Just like quad bikes, operating SSV's safely requires formal training and regular safety refreshers. Without them, important safety messages fade over time.

The widespread belief that side-by-sides are "safe" can create a false sense of confidence, encouraging risky behaviours—such as not wearing seat belts or helmets, or even disabling safety features. When these vehicles become part of the daily routine, it's easy to forget the danger they pose but this is often when accidents happen.

Helmets and seatbelts save lives

Side-by-sides do offer more protection than quad bikes, thanks to their roll cages and enclosed cabs, but this protection is only effective when used properly. The roll cage does little to prevent injury if you're not wearing a seatbelt. Without it, you risk being thrown from the vehicle, crushed beneath it, or tossed violently inside the cab during a rollover.

Seatbelts help keep the operator within the vehicle's protective zone and significantly reduce the likelihood of serious or fatal injuries. Wearing one is not just recommended—it's part of the state of knowledge around known risks and controls. Manufacturers clearly state in manuals and on warning labels that seatbelts must be worn when operating an SSV. Ignoring this guidance not only increases risk—it may also expose you to legal liability if something goes wrong.[2]

Implementing Effective Control Measures

As the owner or manager of a dairy business, you have a legal responsibility under work health and safety laws to identify and manage risks associated with using side-by-side vehicles on your property. This includes taking all reasonably practicable steps to ensure the health, safety, and welfare of your employees, contractors, visitors and yourself.

To manage the risks associated with using SSV's, it's essential to implement effective control measures. These are often a combination of actions that, together, improve safety. Examples include, but are not limited to:[3]

- Select the right vehicle for the task and the terrain.
- Provide training and information to all operators, including family members and employees, so the SSV is used competently and according to manufacturer instructions.
- Enforce the use of seatbelts for both drivers and passengers at all times.
- Require helmets for all occupants to minimise head injury in the event of an accident.
- Ensure doors or cab nets are closed to keep limbs and bodies within the protective rollover zone.
- Use only approved attachments, as recommended by the manufacturer.
- Develop and follow safe operating procedures, which are often provided by the manufacturer.
- Secure the vehicle when not in use, including removing and storing the key out of reach of children.
- Regularly maintain the vehicle and ensure it's used in line with manufacturer guidelines.
- Prohibit children under 16 from operating the vehicle under any circumstances.
- Never exceed load limits, as this compromises handling and stability.
- Never carry passengers in the rear cargo tray, which is not designed to safely transport people.

These control measures should be reviewed regularly. If they're not effective, they must be revised to ensure they adequately manage the risks.

A Wake-Up Call

Jenny's near-miss was caused by a combination of wet weather, challenging terrain, and misjudged expectations about how the vehicle would respond. Had she been wearing her seatbelt and helmet, she would still have been shaken—but likely would have avoided the head injuries that left her sidelined for days.

Recognising the seriousness of what happened, Jenny acted immediately. She introduced new safety rules for when using the side-by-side: seatbelts are now mandatory, and all operators and passengers must wear a properly fitted helmet.

Her story serves as a powerful reminder that no vehicle is risk-free—and that simple precautions can make the difference between a close call and a tragedy.

More Information

Side-by-side vehicle safety – Worksafe Victoria

Side-by-side vehicles fact sheet – SafeWork NSW

1. FarmSafe Australia 2025. Safer Farms 2025 / Agricultural Injury and Fatality - Trend Report. PDF Document.

2. Worksafe Victoria Safety Alert 2021. Side-by-side farm vehicles: Don't ignore the seatbelts. Accessed 04 August 2025.

3. Safework NSW 2024. Agriculture. Side-by-side vehicles. Accessed 05 August 2025

WorkSafe QLD 2024. Safety Alert. Accessed 05 August 2025

Safer Farms Agricultural

INJURY AND FATALITY – 2025 / Trent Report

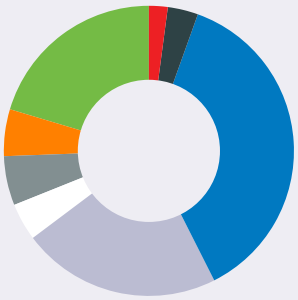
The mental health and wellbeing of farmers and their families continues to be a key focus for our business, with WFI joining the National Farmers Federation's call to action for further government investment in this space. Over the past year, we have seen a 75% increase in workers compensation claims relating to anxiety and stress, indicating there is a pressing need for more support.

WFI remains steadfastly committed to improving farm safety. WFI local area representatives, who live and work within rural and regional Australia, continue to work closely with their farming clients, walking their farms together to ensure they understand and minimise their site-specific risks.

We know not everyone gets a second chance, and a momentary lapse in concentration can change a life forever. We hope that through sharing our data and insights in this report, we can help raise awareness of incident triggers and types, with the aim of reducing injuries and fatalities on farms.

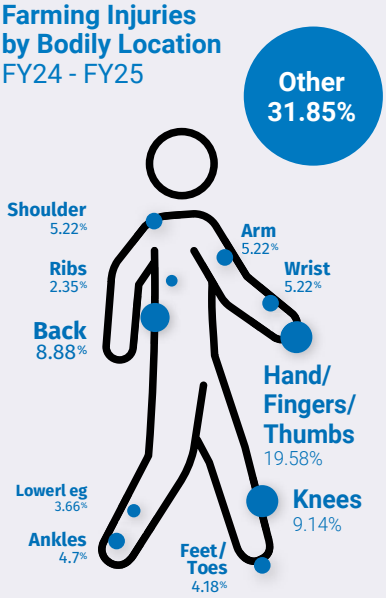
2025 WFI INSURANCE – Key Agricultural Insights

Agricultural Incidents by Sector
FY24 - FY25



- 37.08% Other
- 22.19% Grain Sheep/ Grain Beef
- 4.18% Offshore Longline /Aquaculture
- 5.48% Forestry /Logging
- 5.22% Shearing
- 20.37% Beef Cattle Farming
- 2.09% Poultry Farming
- 3.39% Dairy Cattle Farming

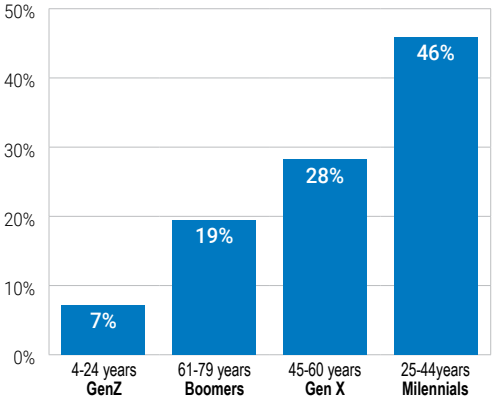
Farming Injuries by Bodily Location
FY24 - FY25



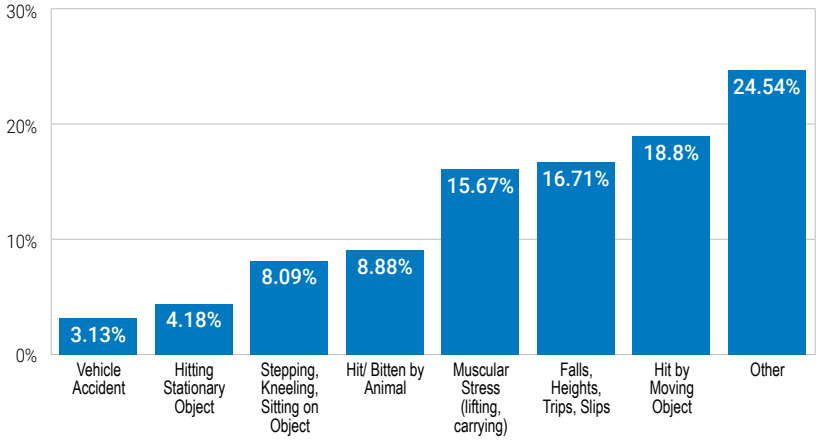
Farming Injury Type
FY24 - FY25

- 13.32% Lacerations /Open Wounds
- 20.1% Fractures
- 11.49% Muscle/ Tendon Strains NON TRAUMA
- 5.74% Soft Tissue Injuries TRAUMA
- 4.44% Contusion /Bruising
- 44.91% Other Injuries

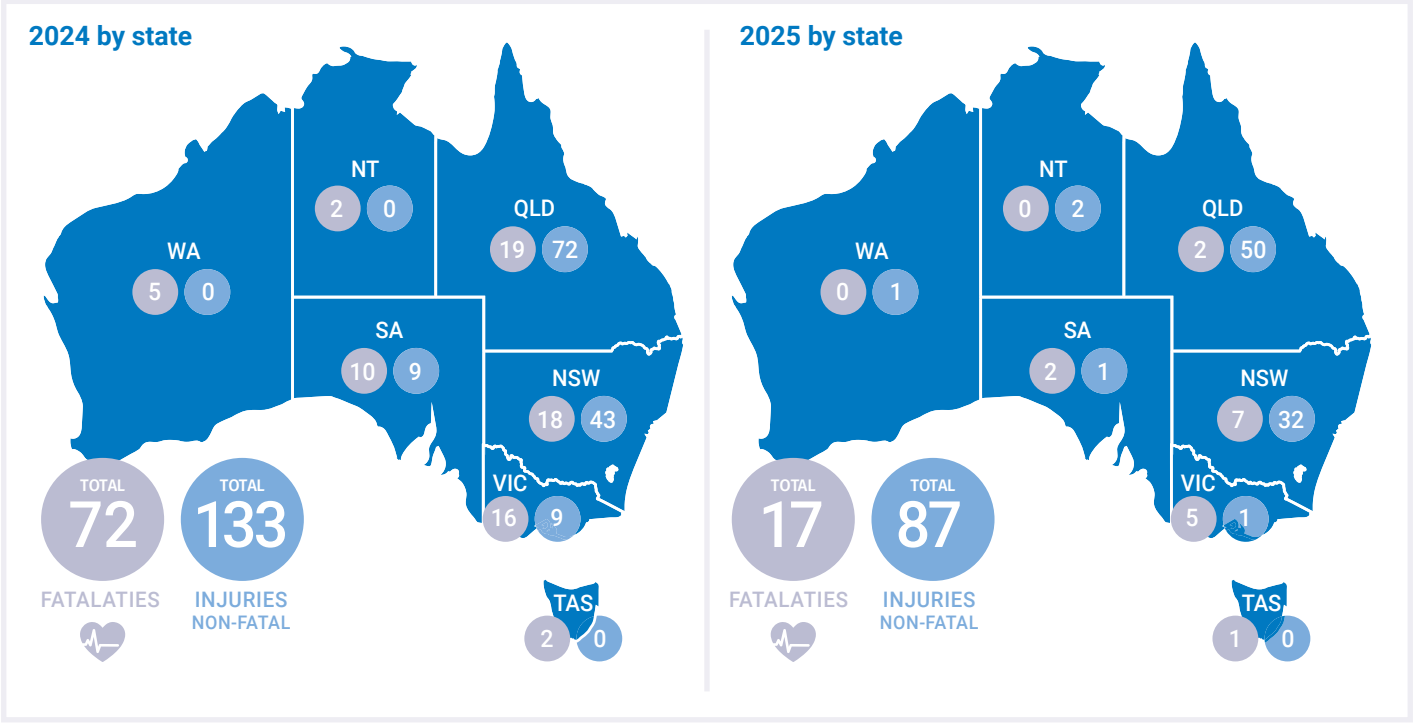
Farming Accidents by Age
FY24 - FY25



Mechanism of Injury
FY24 - FY25



Snapshot



A warning we can't ignore and a *Second Chance* we can't waste

In 2023, the agricultural sector recorded its lowest number of on-farm fatalities in recent history: 32 lives lost. While any loss is too many, it felt like a step in the right direction; a hopeful sign that safety messages were cutting through, that culture was shifting. But in 2024, the momentum reversed. Tragically, we saw 72 people die on Australian farms, the highest number of fatalities in two decades.

This sharp rise should be seen for what it is: a serious warning. A year that reveals just how fragile progress can be, and how quickly complacency, pressure, fatigue, or a moment's inattention can turn into tragedy.

Yet even more concerning is what hasn't changed. For more than a decade, the number of severe injuries on Australian farms has remained stubbornly static. Each year, hundreds of people are hospitalised, many with life-altering consequences and the patterns are predictably familiar: machinery incidents, quad bike rollovers, livestock handling, falls from heights. These injuries aren't just statistics. They're livelihoods changed, families impacted and communities stretched.

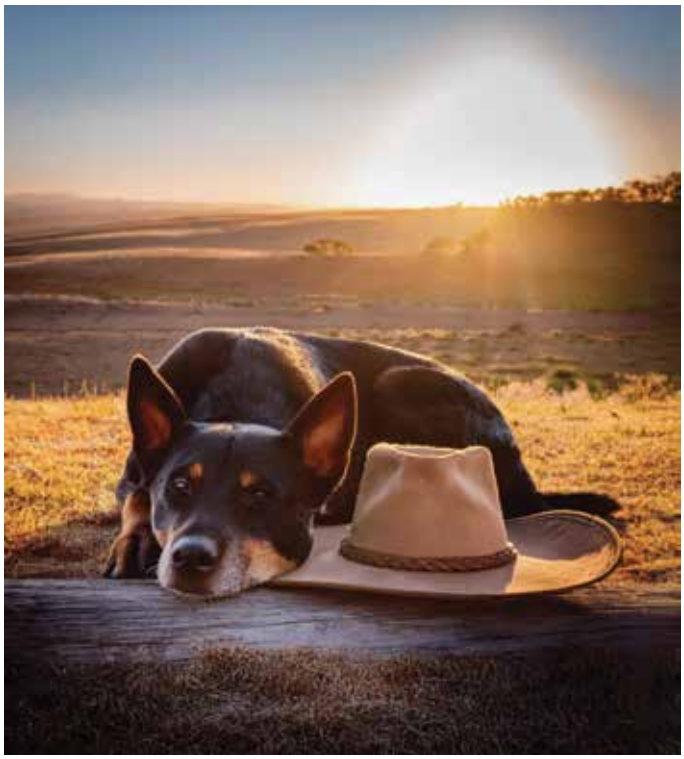
The consistent injury rate tells us something important: that while safety messages may be heard, they're not always translating into behaviour change. Or, that the systems and structures farmers work within, from limited time, to outdated equipment, to cultural pressure to 'push through', continue to place them at unacceptable risk.

2025 must be our second chance. A reset. A year to take a hard look not just at what went wrong in 2024, but what isn't working in the bigger picture and to start having more honest conversations about the conditions, expectations and everyday decisions that shape safety on Australian farms.

Reducing deaths is critical, but bringing down the unchanging rate of severe injuries is equally urgent. This means thinking beyond high-visibility campaigns and asking what practical support farmers need to shift everyday behaviour including better planning, better conversations, and less tolerance for the 'near miss' culture that normalises risk.

We don't get to choose the warning. But we do get to choose what we do next.

Let's treat 2025 as the second chance it is; to work smarter, lead by example, and make sure this year tells a better story.



Behind every number is a name. Behind every injury, a life changed forever.

Effect of Ensiling Time on Sorghum Silage – Final Report

Dr. David Barber
Dairy Nutrition and Extension Consultant

Starch concentration and digestibility are an important driver of forage quality for dairy diets, with increases in both starch concentration and digestibility contributing to the improved metabolizable energy of a forage (ME; MJ ME/kg DM). This project, funded by the Subtropical Dairy South-east Queensland Regional Group, investigated the potential increase in starch digestibility of sorghum silages with extended ensiling time over 6, 12, 18 and 24 months. It is well established that ensiling corn silage for a period of at least 3 – 6 months has a positive impact on corn silage starch digestibility. A previous Subtropical Dairy project that collected on-farm corn silage samples from fresh forage to 13-month ensiled corn silage showed that corn silage digestibility increased by approximately 5.25% units/month then plateaued out after 6 months of ensiling (Figure 1).

This project collected fresh samples of White Sorghum (variety Liberty), Red Sorghum (variety A62) and forage sorghum (variety Megasweet) at harvest time (February 2023) from 2 commercial dairy farms in southeast Queensland and ensiled them in 10kg plastic buckets for 6, 12, 18 and 24-months. A fresh sample was tested for starch concentration and digestibility as a base line. An additional 22 samples varying in ensiling time were also collected on commercial farms in Queensland and tested for 7-hr starch digestibility through Forage Lab Australia.

Key Results

- All sorghum silage types increased in starch digestibility over 24 months of ensiling (Figure 2, Page 13) at a similar rate.
- The degradability of the white sorghum silage is slightly lower as the fresh white sorghum silage was lost by the lab, so the trendline may be skewed by the 3-month sample sent as its replacement.
- All varieties showed a positive effect of ensiling time on starch digestibility when all samples where included (Figure 3, Page 13).
- The variability in starch digestibility of the white grain sorghum silage over time is due to level of processing as there is only one variety of white grain sorghum available commercially (Figure 3).
- Variability in the forage sorghum and red sorghum values is due to variety and extent of processing at harvest.
- Forage sorghum showed the lowest overall starch digestibility but had a similar starch concentration (14.1%) compared to the white (17.9%) and red (12.1%) grain silages.

Figure 1. *Effect of ensiling time on corn silage starch digestibility.*

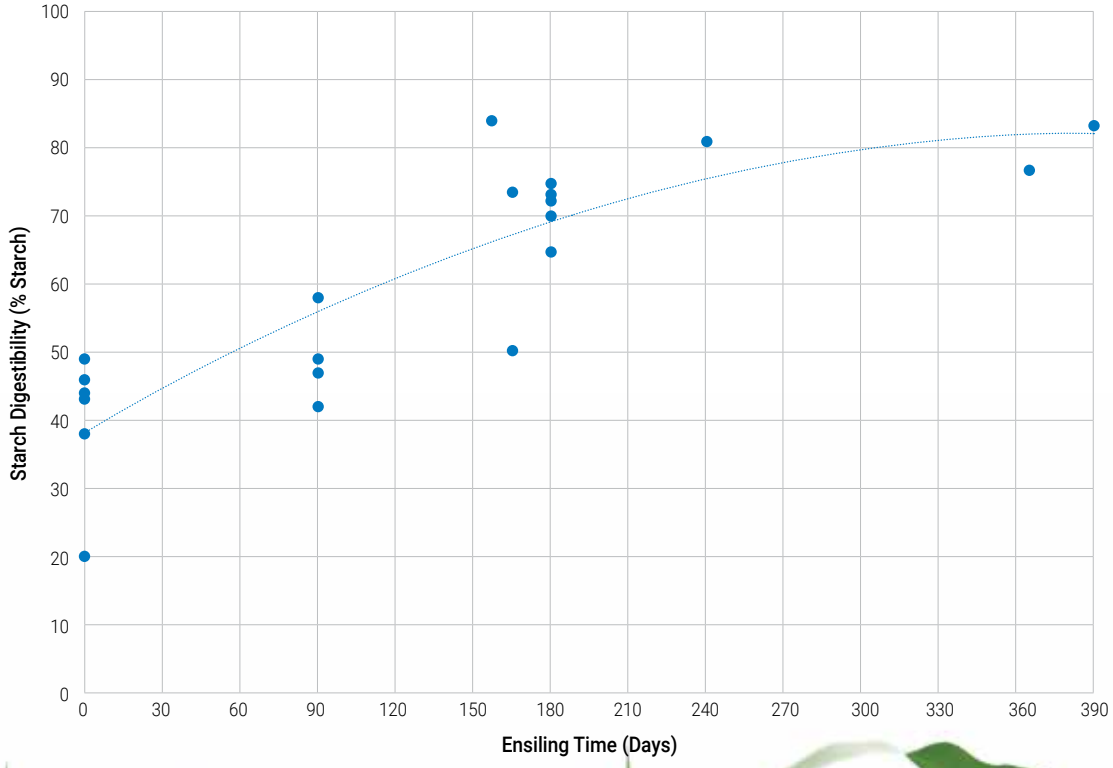


Figure 2. *Effect of ensiling time on white grain, red grain and forage sorghum silage starch digestibility over 24-months of ensiling in plastic buckets.*

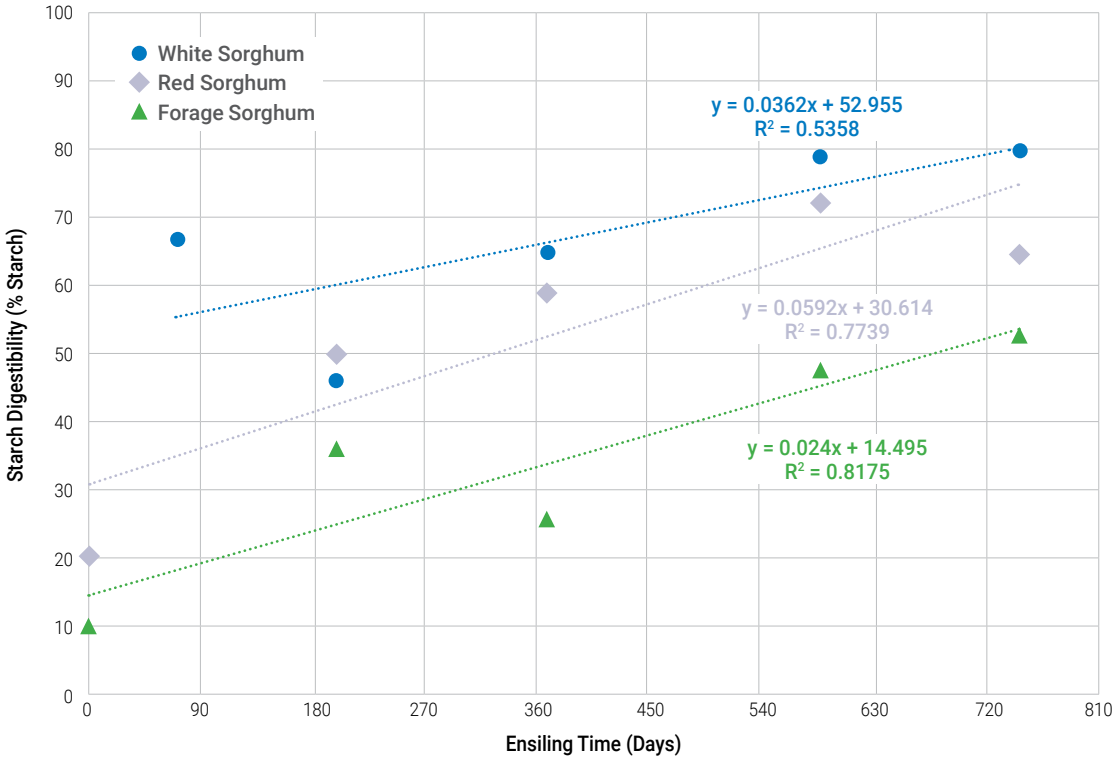
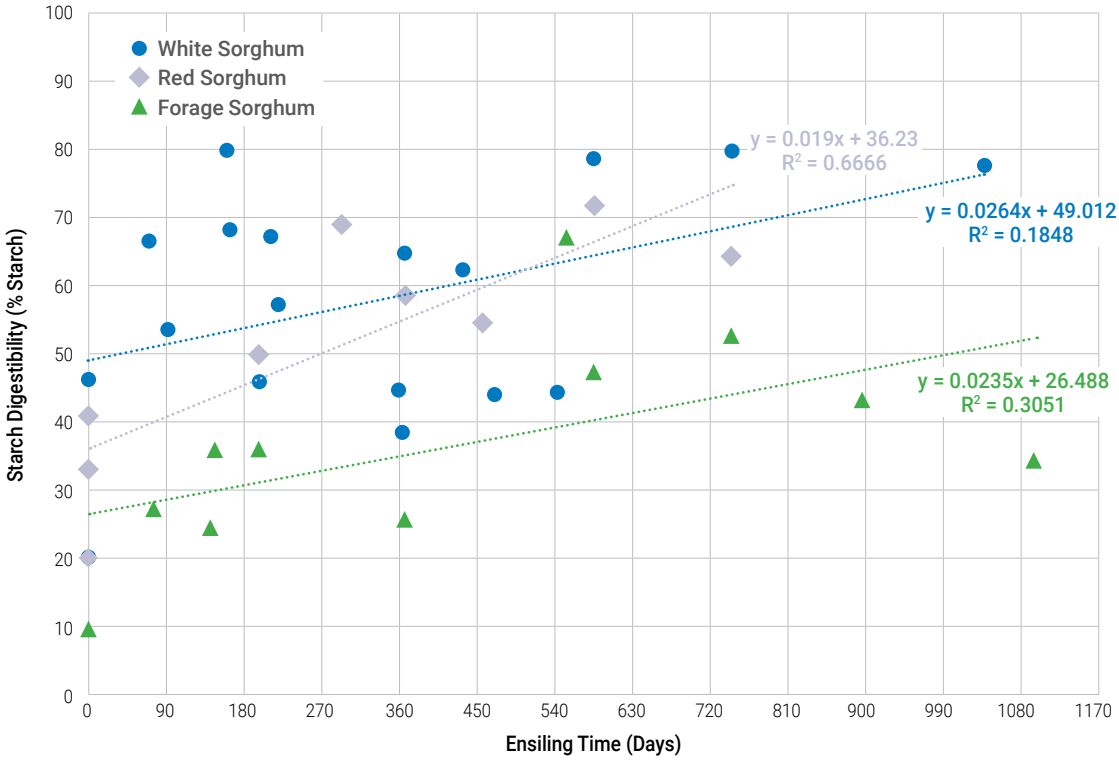


Figure 3. *Effect of ensiling time on white grain, red grain and forage sorghum silage starch digestibility over 36-months of ensiling.*



Trans Ova Genetics, official Australian launch

On July 1, 2025, Trans Ova Genetics, the global leader in bovine reproductive technologies, will officially launch in Australia in conjunction with Total Livestock Genetics (TLG) in Camperdown, Victoria, Australia, marking a major step in global livestock reproduction innovation. For the first time, Australian cattle producers will benefit from the advanced IVF technologies developed by Trans Ova Genetics.

With Australia ranking third in global beef production and among the top ten in dairy, it's clear that producers here are leading the way—making it the ideal next step for Trans Ova to support the continued success of producers through advanced reproductive technologies by bringing its toolbox of services closer to home.

"Australia presents an exciting opportunity for growth. Producers here already recognize the value of advanced reproductive technologies, and we're thrilled to deliver our industry-leading IVF solutions to support their success," says Chief Operating Officer, Katie Jauert Jess.

Since the beginning of the year, Trans Ova has been working closely with the team at TLG to integrate its proven systems and rigorous protocols into the Camperdown facility. Several members of the TLG team have completed extensive hands-on training in the United States, ensuring the seamless delivery of services that meet Trans Ova's high standards of quality. Upon passing all quality control checks, the new lab has already started creating IVF embryos for clients commercially.

"We are pleased that Genetics Australia will be collaborating to bring the Trans Ova brand and technology to Australia. In our business we strive to do what is best for our clients and the Trans Ova team has similar values. Having access to the technologies of Trans Ova, which is one of the best if not the best company doing IVF in the world, will be very rewarding for our clients," says Genetics Australia Chief Executive Officer, Anthony Shelly.

Trans Ova is internationally recognized for its superior animal husbandry and reproductive expertise. The company operates through an integrated network of regional centers, satellite locations, and on-farm services. Trans Ova expects to expand further into Australia in the future.

About Trans Ova Genetics

Headquartered in the USA and founded in 1980, Trans Ova Genetics provides industry-leading reproductive technologies for breeders seeking to advance and amplify superior genetics. The company helps multiply the genetic success of a herd.

Reproductive technologies, such as embryo transfer, In Vitro Fertilization (IVF), sexed semen and genetic preservation are considered excellent reproductive tools for breeders seeking to achieve specific breeding and reproduction goals.

For more information, please contact Anthony.Shelly@genaust.com.au or +61 0408 529 410

New hearing test rules for Queensland businesses

From 29 July 2025, all Queensland businesses, including those in agriculture, must comply with new Workplace Health and Safety (WHS) laws requiring audiometric testing for any workers exposed to hazardous noise levels where hearing protection is required. If your workers are exposed to noise that exceeds exposure standards, you must provide regular hearing tests to monitor their hearing health and meet legal obligations.

Key Requirements

- **New workers:** Must receive a hearing test within three months of starting noisy work, and then every two years.
- **Existing workers:** Must be tested before 29 July 2027, and then every two years ongoing.
- Fines of up to $6,000 may apply for failing to comply.

Why It Matters

Regular audiometric testing:

- Aims to prevent noise-induced hearing loss; a common but preventable workplace injury, and helps safeguard workers' hearing over the long term.
- Ensures you are meeting legal duties as a PCBU (Person Conducting a Business or Undertaking)

What are the safe exposure standards?

Hearing protection is required when workplace noise levels exceed the limits, as measured directly at the worker's ear:

- 85 dB(A) over an 8-hour day (LAeq, 8h), or
- 140 dB(C) at any peak (LC, peak)

In simple terms

- If a worker is exposed to an average noise level of 85 decibels over an 8-hour shift, that's considered the maximum safe limit before hearing protection is legally required.
- And, if a sudden, sharp noise (like hammering, metal-on-metal noise or explosions) reaches 140 decibels or more, it's considered too loud, even if it only happens once. This kind of extreme noise can cause instant hearing damage, so protection must be used if peak levels reach this point.

Above these levels, noise can cause permanent hearing damage — even if it doesn't seem painfully loud at the time.

Support materials and FAQs are available to help businesses understand and implement these changes.

Audiometric testing frequently asked questions

Worksafe communication kit; Audiometric testing regulations – effective 29 July 2025

North Queensland Dairy Development Project

Key points from Review of Key Performance Analyser results – October 2024 to February 2025

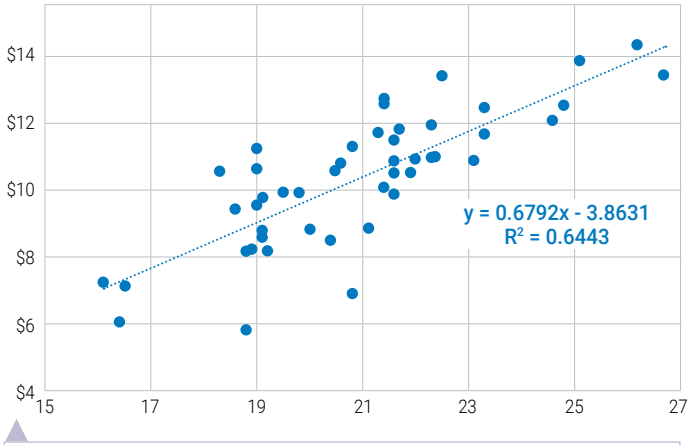
The North Queensland Dairy Development Project (NQDDP) has emerged from a strong collective sense to revitalise the NQ dairy farm sector through collaboration between the Queensland Department of Primary Industries, Bega, Dairy Farmers Milk Cooperative and Subtropical Dairy. The project commenced in July 2024. The project is funded from the Drought and Climate Adaption Program (DCAP) and the Farm Business Resilience Program (FBRP) with significant in-kind support from the project partners and farmers.

One of the projects in the NQDDP has been reviewing short term profit drivers across 11 farms on a monthly basis. This project is using a prototype analysis tool called the Key Performance Analyser (KPA) which was developed by Subtropical Dairy. The KPA was designed to review and benchmark short term cash flow and the key biophysical parameters such as herd nutrition, reproduction, herd health and labour efficiency. It tracks how an individual farm is progressing and also compares farm performance against regional benchmarks, in this case, published QDAS results for Far North Qld. The project farms also meet periodically to review their results collectively.

At a pasture management field day delivered by NQDDP partners on the 10th July at Millaa Millaa, the following results from the KPA were discussed. It is not surprising that given that FNQ farms that were able to convert their cheapest feed resource, tropical grass pasture, into milk through an energy efficient herd, were the most profitable.

The NQQDP project team is continuing to use the KPA with project farms for at least the next 12 months. Prototypes of the KPA have also been written for southern Queensland dairy businesses such as partial mixed ration and total mixed ration farms, thanks to the support of the Queensland Government Farm Business Resilience Programme.

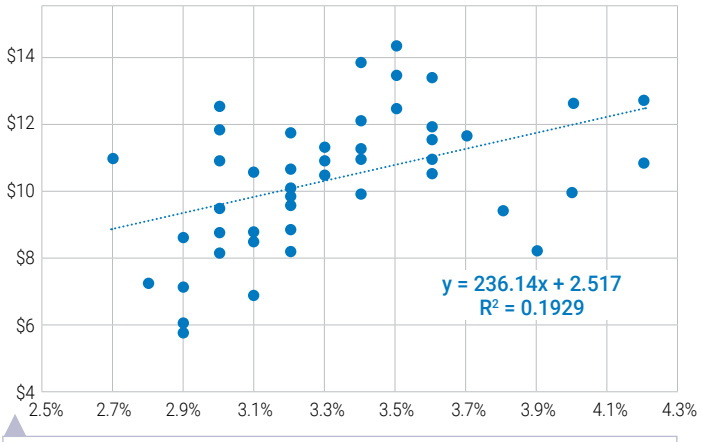
Farms with greater milk production per cow achieved a higher margin per cow (MOFC) (milk revenue – feed costs)



MOFC ($ per cow per day) versus Milk yield (litres of Energy corrected milk per day)

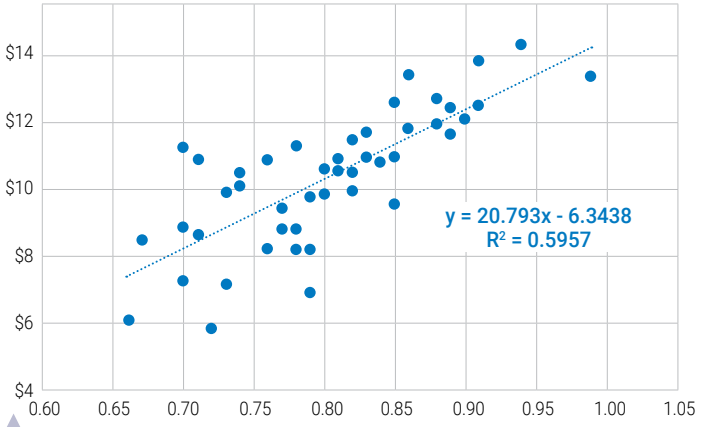
This was due to a number of factors:

1. **Higher milk production due to cows eating more (expressed as a percentage of liveweight)**

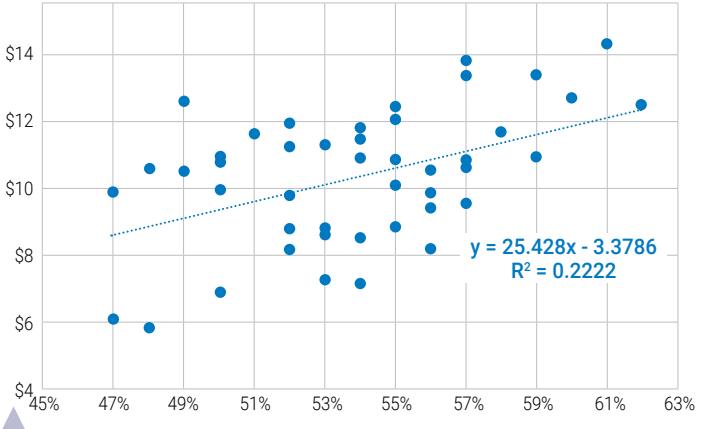


MOFC ($ per cow per day) versus Feed intake per day (% Liveweight)

2. **Cows that ate more (as a proportion of liveweight) were more efficient because they could use more energy for milk production**

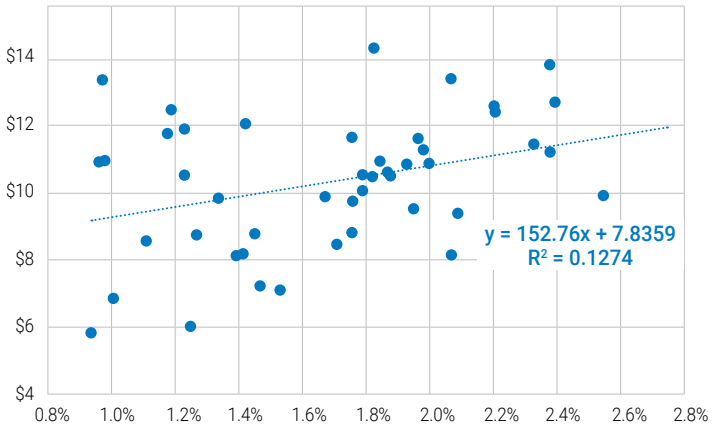


MOFC ($ per cow per day) versus Milk production efficiency (kg Milk Solids per kg LW per lactation)

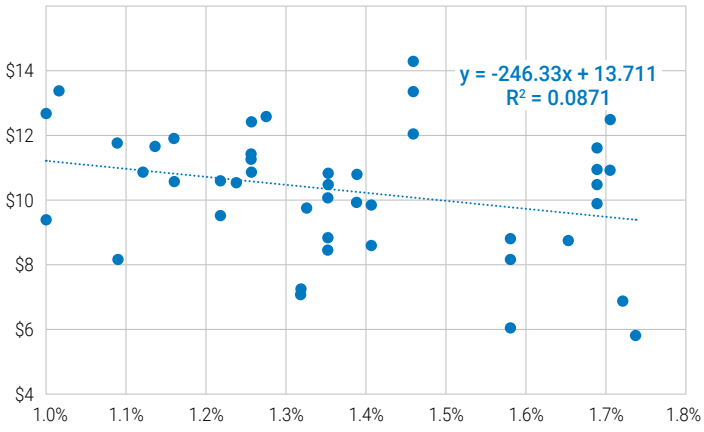


MOFC ($ per cow per day) versus % of energy intake used for milk production

3. Cows that achieved higher milk production and efficiency from eating more pasture, as opposed to additional concentrate, were more profitable



MOFC ($ per cow per day) versus pasture intake per day (% LW)



MOFC ($ per cow per day) versus concentrate intake per day (% LW)

4. If we could feed 1 additional kg dry matter (DM) of pasture per cow per day, what would it mean in terms of profit? What impact does overall milk production per cow (and cow efficiency) have on this? Would this apply to other pastures like annual ryegrass?

Milk production[1]	Low			Average			High		
Litres per day	17			21			25		
Feed	Setaria	Ryegrass	Concentrate	Setaria	Ryegrass	Concentrate	Setaria	Ryegrass	Concentrate
Cost[2] $/kgDM	$0.09	$0.16	$0.73	$0.09	$0.16	$0.73	$0.09	$0.16	$0.73
MCE[3] L/kgDM	1.0	1.2	1.5	1.1	1.3	1.6	1.2	1.4	1.7
Milk revenue[4] $	$0.85	$1.04	$1.23	$0.93	$1.13	$1.34	$0.99	$1.20	$1.42
MOFC[5] ($/kgDM)	$0.76	$0.88	$0.50	$0.84	$0.97	$0.61	$0.90	$1.04	$0.69
Profit[6] ($/kg DM)	$0.41	$0.53	$0.15	$0.49	$0.62	$0.26	$0.55	$0.69	$0.34
Profit per farm[7]	$28,305	$37,025	$9,295	$33,667	$43,579	$17,040	$37,957	$48,822	$23,237

1 *Assumes the same liveweight (550 kg), body condition score (4.5). Taken from KPA farms*
2 *Assumes some balancing for nutrients and residues*
3 *Milk conversion efficiency – based on energy content. Litres 4.0% milkfat and 3.2% protein milk per kg dry matter intake. Considers cow energy efficiencies*
4 *Assumes milk price of $0.85 per litre*
5 *Milk income over feed costs*
6 *Assumes non feed costs of $0.392 per litre*CPI (3%) and non lactating stock feed costs of $0.025 per litre. Also assumes non-milk revenue income of $0.054 per litre (QDAS FNQ 2024)*
7 *Annual profit. Average FNQ farm in QDAS had 243 lactations per year*

5. What are other factors that will affect these scenarios?

Pasture quality and density	Topography
Pasture palatability, antinutritionals, contamination	Days in milk
Balanced diets (sugars, protein, macro/micro minerals)	Cow body condition
Heat stress	Herd profile (how many heifers in the milking herd?)
Distance cows walk	Concentrate quality
Track condition (mud)	Altering grazing intervals

Reducing nitrous oxide emissions

Nitrous oxide (N_2O) is a greenhouse gas emitted from organic-rich soils such as fertilised pastures or paddocks where livestock have deposited urine or manure. Reducing N_2O can decrease a dairy farm's total greenhouse gas emissions.

It's possible to reduce nitrous oxide emissions by reducing the farm inputs that contribute to N_2O emissions, or to reduce those emissions through the application of specially designed products.

The direct and indirect N_2O emissions attributed to fertiliser contribute to three per cent of dairy farm emissions; animal waste N_2O equates to about eight per cent of emissions.

The term nitrous oxide interventions refers to products and strategies that are used to reduce the N_2O emitted from dairy farm soils. Two nitrous oxide interventions currently available include:

- Nutrition.
- Reducing fertiliser use.

Nutritional intervention

This involves balancing the ratio of energy to protein in an animal's diet to improve the nitrogen efficiency of a dairy cow's digestive processes. When the proportion of crude protein in the diet is high, there's an increase in the nitrogen excreted in urine. For example, using grain as a feed supplement can boost the energy content of a cow's diet to counteract the seasonal rises in crude protein.

Many dairy farmers are already using nutrition – specifically balancing the ratio of energy to protein of their herd's diet – to reduce N_2O emissions for at least three months of the year (spring) when the crude protein levels in pasture rise.

Balancing the ratio of energy and protein in the diet comes with a significant co-benefit: an increase in milk production as a result of supplementing a pasture diet with grain. The net financial cost or benefit of this strategy is likely to be variable, depending on fluctuations in farmgate milk and grain prices.

KEY POINTS

- N_2O is a greenhouse gas which contributes to about 11% of dairy farm emissions
- On farm, N_2O is emitted from organic-rich soil, such as fertilised pastures or paddocks where livestock have deposited urine or manure
- The direct and indirect N_2O emissions attributed to fertiliser contribute to 3% of dairy farm emissions, while animal waste N_2O equates to 8% of emissions
- Urine N_2O emissions can be reduced by adjusting the diet, particularly by balancing the protein and energy content and the use of urine patch inhibitors
- Reducing fertiliser use and applying fertiliser inhibitors can also mitigate N_2O emissions, although more information is needed about inhibitors
- Reducing fertiliser applications by targeting specific locations to reduce leaching and gas formation (volatilisation) was the most effective way to reduce N_2O emissions
- Modelling suggests applying less fertiliser could deliver a financial benefit, while concentrating on the animal's feed – balancing the energy and protein – may come at a small net cost

Balancing the ratio of energy to protein in an animal's diet to reduce N_2O emissions may achieve around 50 per cent reduction in N_2O emissions from urine.

To accurately gauge the amount of N_2O already abated by the dairy industry, more detail is needed about the extent to which farmers balance the ratio of energy to protein in their herd's diet. Further work is needed to understand the potential benefits of using this practice outside of spring.

Reducing/targeting fertiliser use

This involves applying less fertiliser to paddocks, including limiting application to locations that need nitrogen and to times when there will be less nitrogen loss through leaching and gas formation (volatilisation).

Farm use of urea declined between 2015 and 2020, which suggests more people were using less fertiliser and this trend is expected to continue with increases in fertiliser prices.

Reduced fertiliser use delivers the largest reduction in N_2O emissions but can also result in a financial benefit due to cost savings. These come from a decline in the overall use of fertiliser as well as reduced leaching and volatilisation.

Also, the more this intervention is adopted the less need there is for carbon neutral fertilisers and fertiliser inhibitors – the best use of these is to apply the minimum amount of fertiliser required.

Any reduction in fertiliser use will give an approximately equal reduction in N_2O emissions from fertiliser. It also reduces carbon dioxide equivalent, or CO_2e emissions from fertiliser production.

The effectiveness of this intervention is variable and influenced by the characteristics of farms, weather conditions and previous farm management.

Inhibitors

Inhibitors that reduce N_2O emissions can be added to fertiliser or applied to urine patches. They offer an option to reduce emissions from conservative fertiliser application.

However, there are considerable knowledge gaps that need to be addressed such as the variability in effectiveness, determination of the application rates required compared to traditional fertiliser, and confirmation in international markets that milk from farms using these products is acceptable.

There are a lot of questions about inhibitors on urine patches. Trials demonstrated that the use of inhibitors on patches could decrease N_2O emissions by 25–40 per cent, but this hasn't been proven in a commercial setting.

In a commercial setting, it's expected that the inhibitor would be applied to the urine patch well after deposition and this would decrease the effectiveness of the N_2O mitigation. There are also questions about the timing of grazing after the application of the urine patch inhibitor as there are concerns of transmission from the pasture to the milk and meat. The productivity benefits of inhibitors are also uncertain.

It's a similar story for fertiliser inhibitors. It's understood that associated reductions in direct N_2O emissions can lead to increases in indirect N_2O emission from ammonia gas formation (volatilisation), creating uncertainty about the effectiveness of the product. Results vary from a slight increase in emissions through to more than 50 per cent reductions in soil N_2O emission in some studies.

Fertiliser inhibitors may be less effective at temperatures of more than 25–30° Celsius. There's also a need for more evidence of nitrogen savings associated with fertiliser inhibitors as the current cost of this type of fertilisers is $48 more a hectare than traditional fertiliser. This not only adds costs to the dairy business, but it also means fertiliser used with inhibitors could be one of the most expensive greenhouse gas mitigation options.

Calculating the value of emission reduction strategies

- A review commissioned by Dairy Australia has estimated the costs and effectiveness of different greenhouse gas emission reduction strategies across the Australian dairy farm industry as a whole, based on the most recent information available.
- Each strategy was analysed for its ability to reduce the total greenhouse gas emissions (mitigation potential). The cost of this action was calculated per tonne of carbon dioxide equivalent or CO_2e.
- Combining the mitigation potential and the cost of the reduction paints a picture of the value for money that each strategy could deliver.
- This information will be used to guide research and investment decisions.
- This fact sheet and others in the series provide a summary of the information from research most relevant to individual farmers. They provide a useful starting point for farm businesses looking to understand their options. Farm businesses will need to do further analysis to figure out which option(s) are appropriate for their own business.

FURTHER INFORMATION

This fact sheet is one of a series:

1 Reducing dairy's greenhouse gas emissions
2 Reducing rumen emissions
3 Reducing manure emissions
4 Reducing nitrous oxide emissions
5 Reducing fossil fuel emissions
6 Storing more carbon.

You can find these on the Dairy Australia website.

Benefits of well-grown heifers

Extensive research undertaken in Australia has shown that heifers that reach target weights perform much better in several key areas.

It is important that heifers enter the herd sooner rather than later and produce at a higher level so that the investment in them can be repaid sooner. Better heifers live longer, which means you need fewer replacements to maintain herd numbers.

How much does it cost to rear a heifer?

Modelling undertaken in 2021 in southern Australian systems by Phil Shannon, estimates the cost of rearing replacement heifers is between $1,190/head and $1,718/head excluding the value of the calf at the time of birth. The modelling demonstrated that those heifer rearing operations that focus on reducing the cost of feed while still achieving target growth rates have the lowest overall cost. The breakdown of the cost of rearing replacements under a range of common scenarios are shown in Table 1. This example demonstrates that as more grazed feed is used, the cost of rearing decreases by up to $500/head. Whilst agistment is technically a form of feed cost, an example of full agistment is provided for illustration purposes.

	Scenario			
	Zero grazing	40% grazing	75% grazing	Full agistment
Birth to weaning	$315	$315	$315	$315
Weaning to 200kg	$239	$187	$142	$208
200kg to calving	$1,164	$934	$733	$852
Cost by input (and proportion of total rearing cost)				
Feed (incl milk)	$1,315 77%	$1,034 72%	$787 66%	$208 15%
Agistment	$0 0%	$0 0%	$0 0%	$852 62%
Labour	$140 8%	$140 10%	$140 12%	$53 4%
Vet/animal health	$263 15%	$263 18%	$263 22%	$263 19%
$/kg lwt	$3.12	$2.61	$2.16	$2.50
Total	**$1,718**	**$1,437**	**$1,190**	**$1,375**

Table 1 *Estimates for the cost of heifer rearing based on Dairy Farm Monitor Project figures and input from farmers (Shannon, 2021).*

The four scenarios included in the model included:

- Zero percent grazing; Representing a business that might keep the stock on farm and feed them on supplement only (a diet comprising concentrate and fodder).
- 40 percent grazing; Representing a business that provides some opportunity for grazing (40 percent of the diet) and the balance as concentrate and fodder.
- 75 percent grazing; Representing a business that provides opportunity for grazing (75 percent of the diet) and the balance as concentrate and fodder.
- Full agistment; Representing a business that places all stock out on agistment as soon as they are weaned. No supplement is used.

The assumptions behind feed costs are relatively simple. For each example the assumed cost of concentrate and fodder was held constant:

- Concentrate @ $350/tDM
- Fodder @ $300/tDM
- Grazed feed @$125/tDM

Whilst the purchased fodder cost may appear to be high, it is assumed that the fodder required for rearing replacements needs to be of high quality to provide a balanced diet, and to encourage reduced wastage. Additionally, the grazed feed cost used was based on the average cost of direct grazed feed from the 2019/20 Dairy Farm Monitor data. This is a major influencing input. The cost from birth to weaning remains the same in all examples.

A sensitivity analysis which looked at variation in the cost of grazed feed from $78/tDM (representing the lowest cost of direct grazed feed recorded in the 2019/20 Dairy Farm Monitor data set) to $213/tDM (representing the average cost of home-grown conserved feed recorded in the 2019-20 Dairy Farm Monitor data set) was also undertaken and as expected, demonstrated that any change in the cost of home-grown feed can have a significant impact on the overall cost of rearing replacements. The cost variation in the examples outlined in Table 1 were just over $300/heifer.

It is acknowledged that agistment costs are highly variable. In this scenario, the assumed cost of agistment per week was $7/head from birth to 12 months and $10/ head from 12 months to two-years. It is likely that it will become more difficult to secure 'cheap' agistment given.

What is a target weight?

Target weight is assumed to be the weight of a heifer at various stages of her growth to achieve a weight at calving which will maximise her productivity and longevity. Research has shown that the desirable weight at first calving is 85% of mature liveweight. Therefore for a herd with an optimal mature weight of 600 kg, the ideal heifer is 510 kg at the time of first calving.

Each dairy enterprise will have a different management system that will have different mature-cow liveweights. There is a correlation between mature-cow liveweight and average milk production target or potential (see Figure 1, page 21). A simple way to estimate mature-cow weights on an individual enterprise is to look at the dockets when you sell cull cows. Figure 1 can also be used to estimate ideal heifer weight based on annual cow production. For example, in a 6000-litre (440 kg MS) herd, mature-cow weight is likely to be 625 kg, and ideal heifers at calving should weigh approximately 535 kg.

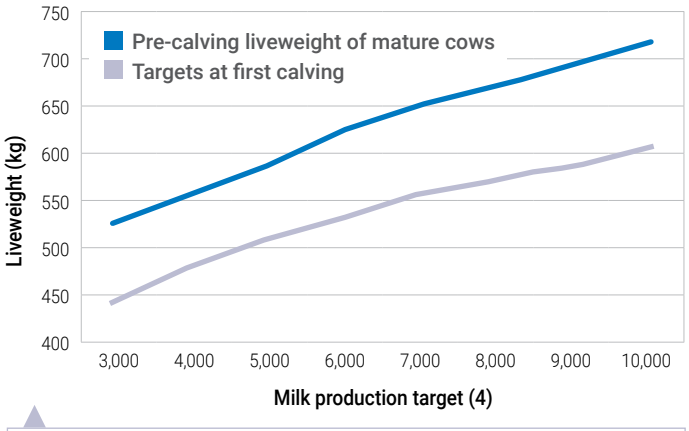


Figure 1 *Correlation between milk production, mature-cow and first-calving liveweight (from Smart 2010).*

Heifer fertility

Liveweight is a much better indicator of when heifers commence oestrous activity (cycling) than age. Heifers which are well grown commence cycling at an earlier age than their lighter herd mates.

Research undertaken in New South Wales showed that the heavier the heifers at 12 months of age, the higher the percentage of heifers that were cycling. 30% of heifers were cycling when they weighed 200 kg compared to 65% when they weighed 260 kg. In New Zealand 90% of Holstein heifers were cycling when they weighed 300 kg.

In seasonal and split-calving herds, heifers can be between 13 and 15 months of age at first joining. This means that all heifers in a group must be grown so that they achieve liveweight targets by the time of joining. In year-round calving herds there is some flexibility in deciding at what age to join maiden heifers; however, it is less profitable to join heifers so that they calve at more than 24 months of age (or 15 months of age at first joining).

Heifers that are grown well get in calf more rapidly. InCalf research (Table 2) has shown that in seasonal and split-calving herds, higher weights pre-calving result in heifers that calve sooner than heifers with a lower weight pre-calving. This means that heavier heifers have conceived at a faster rate than lighter heifers. Measures of three- and six-week in-calf rates increased as precalving liveweight increased (Table 2).

Liveweight at first calving (kg)	3 week in-calf rate %	6 week in-calf rate %
<400	36	79
400–440	49	80
441–470	55	91
471–510	65	90
511–540	53	88
>540	68	94

Table 2 *Percentage of heifers in calf by three weeks and six weeks at different pre-calving liveweights.*

Longevity

Heifers that enter the herd at their target weights will be more likely to survive longer in the herd as milkers. Better-grown heifers calve early in the calving period, get back into calf more quickly and produce more milk. There will be fewer reasons for first-calvers to be culled.

In a study undertaken in year-round herds near Camden, NSW, 33% of first calvers were culled before their second calving. In New Zealand studies, 13.4% of two-year-olds were culled for various reasons. In Northern Ireland, 22% of heifer calves identified as herd replacements never enter the milking herd, while in a United Kingdom study, 11% of replacement heifers were lost before calving and 19% were culled in their first lactation.

Worldwide, it seems that too many heifers are culled too early. This provides a potential opportunity for dairy farmers—reduced culling of heifers results in a need for fewer replacements to be reared, which results in better welfare outcomes and a reduced carbon footprint from the dairy industry. Alternatively, there is greater opportunity to cull older animals for important reasons such as poor milk quality, or for farmers to derive an income from the sale of excess animals.

A second measure of the success of rearing heifers is the ratio of second-calvers to first-calvers. In herds where successful heifer-rearing practices are occurring more than 85% of first-calvers will calve for the second time.

	Extra production from an extra 1 kg liveweight			Extra production from an extra 50 kg liveweight		
	Milk (l)	Fat (kg)	Protein (kg)	Milk (l)	Fat (kg)	Protein (kg)
1st Lactation	4.0	0.18	0.18	203	9.0	9.0
2nd Lactation	8.3	0.26	0.39	415	13.0	19.5
3rd Lactation	8.4	0.33	0.28	422	16.5	14.0
Totals	20.8	0.77	0.85	1041	38.5	42.5

Table 3 *Increase in milk and milk solids due to increased liveweight at calving (from Freeman 1993)*

Key measure	Measurement	Target	Trigger
Age at first calving		24 months	>27 months
Heifer fertility	% calved by 3 weeks	70%	<60%
	% calved by 6 weeks	95%	<85%
First calf heifer fertility	6-week in-calf rate	60%	<50%
	21-week not in-calf rate	6%	>10%
	100-day in-calf rate	53%	<45%
	200-day not in-calf rate	12%	>18%
Production	Relative to mature-cows	>85%	<80%
Longevity	% second calvers to first calvers	>85%	<80%
	% of cows 4–8 years old	>50%	<40%

Table 4 *Recommended measures of replacement heifer rearing performance*

Interpreting heifer genomic results

Genomic testing provides a lot of information on each animal. This fact sheet offers tips for those starting out with genomics to understand how to interpret the results and identify what information is most relevant for herd management decisions.

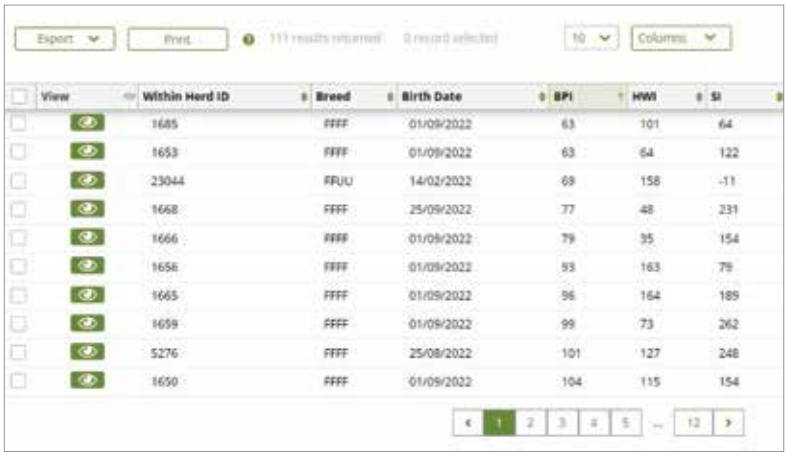
You will receive your results directly from your genomic service provider by email, web service or app. The results from all the animals genomically tested are also available by logging into your herd's DataVat account (regardless of which genomic service provider you used). This fact sheet outlines tips for interpreting results using **DataVat** tools.

Some of the first decisions dairy farmers tend to make from heifer genomic testing include sorting to sell heifers, filter for priority traits and to check for data gaps which causes animals to come back without results.

Sorting to sell

If you are trying to decide which heifers to sell, start by finding the column in your results that shows the index that best suits your business and look at this number first. It might be Balanced Performance Index (BPI), Health Weighted Index (HWI) or Sustainability Index (SI). Sort your results on that number with the lowest number on the top. These are the animals to consider selling.

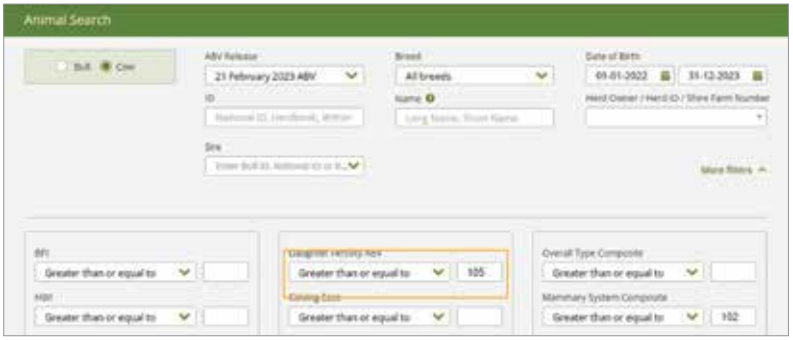
Example of DataVat online tool with genomically tested heifer results listed



Filter for priority traits

To further refine your list, you might want to prioritise one or two other traits and set a certain cut off level for your herd. For example, if fertility is a priority you may set a Fertility ABV less than 105 to identify the least fertile heifers. You can do this by setting filters in the Animal Search on DataVat.

Your list now shows you the heifers that are candidates for selling.



Mind the gaps

Check to see if there are animals without results. If there are, it is usually because of an inconsistent genotype of a sire or dam on the calf's record. It's a good idea to respond quickly to any queries from your genomic service provider about the parentage of animals so that you can get a quicker result. Find out more.

Terrific Tuesdays

Your genomic service provider's system and DataVat are updated most Tuesdays with the latest genomic results. You can check new animals as well as see any updates for heifers and bulls that you have previously tested.

Next steps to build the strategy

Once you've got the hang of sorting animals based on your chosen index, and filtering for priority traits, you are ready for delving a bit deeper into your herd's genomic results. You can start thinking strategically about the traits that are important to your business, monitoring genetic trends, selecting sires that match your priorities, identifying terminal dams (i.e. those that may be joined to beef/not used to breed replacements), haplotype carriers and sharing your results.

Here are some examples:

- Plan the matings for the group of animals you've just received results for. Are some females prioritised to receive beef semen so they don't produce replacement heifers for your herd?
- Check your herd's trends for important traits to see if they are on track and revise your sire selection if you are not satisfied.
- Share your results with staff and your trusted advisors to ensure that the whole team is working towards your strategy (you can do this on DataVat).
- Check for genetic conditions or haplotypes to make sure animals aren't carrying worrisome defects.
- Explore! Speak with an advisor or contact DataGene to learn more about the information contained in every results report.

Acknowledgement

DataGene is an initiative of Dairy Australia and the herd improvement industry. DairyBio provides the research pipeline to develop and maintain Australian Breeding Values.

Contact Datagene

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2025 Event Calendar

DATE	EVENT	REGION	LOCATION	CONTACT
September				
2	**Transition Cow/Low Stress Calving on-farm**	South East Qld	Beaudesert	Belinda Haddow
10	**Rearing Healthy Calves in Practice (3 of 3)**	Darling Downs	TBC	Belinda Haddow
17	**Heifers on Target and Dairy Beef**	Far North Qld	Malanda	Fi Neville
17	**Far North Coast NSW Dairy Discussion Group**	Far North Coast NSW	Kyogle	Roisin Wilson
18	**Employment Starter Kit (Express)**	Online	National	Belinda Haddow
30	**Dairy Australia dinner**	Far North Qld	Malanda	Fi Neville
October				
21	**Heifers on Target and Dairy Beef**	Sunshine Coast	TBC	Belinda Haddow
23	**Heifers on Target and Dairy Beef**	South East Qld	TBC	Belinda Haddow
30	**Heifers on Target and Dairy Beef**	Darling Downs	TBC	Belinda Haddow
TBC	**Rearing Healthy Calves in Practice**	Far North QLD	Malanda	Fi Neville
TBC	**Disbudding workshop**	Far North Coast NSW	TBC	Roisin Wilson
TBC	**Disbudding workshop**	Mid North Coast NSW	TBC	Roisin Wilson
TBC	**Disbudding workshop**	Darling Downs	TBC	Belinda Haddow
TBC	**Disbudding workshop**	South East Qld	TBC	Belinda Haddow
TBC	**Disbudding workshop**	Sunshine Coast	TBC	Belinda Haddow
November				
4	**Heifers on Target and Dairy Beef**	Mid North Coast NSW	TBC	Roisin Wilson
5	**Heifers on Target and Dairy Beef**	Far North Coast NSW	TBC	Roisin Wilson
10	**Understanding Farm Carbon Workshop**	Far North Coast NSW	Casino	Roisin Wilson
20	**Subtropical Dairy Annual General Meeting**	Online	Online	Brad Granzin
TBC	**Healthy Hooves**	Far North QLD	Malanda	Fi Neville
TBC	**Disbudding calves**	Far North QLD	Malanda	Fi Neville

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