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## Heifers on target

Lesley Irvine, TIA

I have been driving for a lot of years. I drive every day. Yet every few years, I participate in a defensive driving course. Why? I don't think I am a bad driver. I am actually one of the few people I trust to drive me! I generally get to where I want to go without any incidents, minor or major. So what is the point in doing training in something I already know how to do adequately?

I find that over time, I let my standards slide a bit. I know I should travel at least 3-seconds behind the car I am following, but I get impatient, or I am in a hurry and I creep closer. After a while, it doesn't worry me that much. I forget how important it is to maintain that 'distance' of 3-seconds.

When I go to the defensive driver training, I am going over information that I already know – I have just forgotten how important it is. I leave the training with a renewed sense of this importance and motivation to do what I know I should be doing.

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I don't think I am alone in this. I think it is human nature to know in theory what is best practice but for a multitude of reasons, not to be actually doing this best practice.

For this reason, back when we were still able to hold on-farm discussion groups, Elizabeth Mann from DairyTas conducted Dairy Australia's *Heifers on Target* program with Sam Flight and Symon Jones through the Dairy HIGH regional discussion groups. Even though most farmers probably know that achieving heifer target weights is important for fertility, production and longevity, how many are focused on this important aspect of dairying? Is it something you know is important but there are a lot of other things that require immediate attention so you don't actually monitor whether your heifers are reaching target weight? They look ok so that is good enough?

The purpose of the *Heifers on Target* program is to remind us of the importance of achieving heifer liveweights and motivate us to actively manage heifers to make sure targets are met.

### Importance of heifer liveweight targets

**Heifer fertility.** Well-grown heifers will start oestrus activity (cycling) earlier making them more likely to become pregnant earlier in the mating period. This makes a big difference in the six week in-calf rate (Table 1).

**First calver fertility.** There is a lot happening in a short period of time for the first calver. She has her first calf, is milked for the first time, has new herd mates and a new routine. At the same time she is continuing to grow. An InCalf study determined two-year-old heifers had lower 6-week in-calf rates and higher empty rates than animals aged three to seven years of age. With Tasmania's strongly seasonal calving pattern, this often means a large number of two-year-old heifers are culled from the dairy herd for being late in-calf or empty.

**Table 1 Percentage of heifers in calf by three weeks and six weeks at different pre-calving liveweights**

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

*Source: A guide to growing more productive heifers, Dairy Australia*

Heifers that are heavier at their first calving are more likely to become pregnant earlier in the following mating period (Table 2).

**Table 2 Effect of liveweight at first calving on subsequent six-week in-calf rate, 21-week empty rate and potential late-calvers as second calvers in seasonal/split calving herds.**

Liveweight at first calving (kg)	6-week in-calf rate (%)	21-week in-calf rate (%)	Late calvers at 2nd calving
<400	49	79	30
400-440	60	87	27
441-470	68	89	21
471-510	68	87	19
511-540	75	88	13
>540	77	87	10

*Source: A guide to growing more productive heifers, Dairy Australia*

**Milk production.** Heifers that are heavier at first calving have higher milk production (Table 3).

**Table 3 Increase in milk production due to increased liveweight at calving**

	Extra production from an extra 1 kg liveweight		
	Milk (L)	Fat (kg)	Protein (kg)
1st lactation	4.0	0.18	0.18
2nd lactation	8.3	0.26	0.39
3rd lactation	8.4	0.33	0.28
<b>Total</b>	<b>20.8</b>	<b>0.77</b>	<b>0.85</b>

*Source: Your heifers in the balance, Mark Freeman*

**Longevity.** Heavier heifers with higher fertility and milk production means these heifers are likely stay in the herd for longer. Given that it typically costs at least \$1300 to rear a heifer to point of first calving, it makes financial sense to then ensure she stays in the herd and makes a profit. In addition, heifers should contain the best genetics of the herd so will have the best potential milk production and other traits you are breeding for.

### Target weight

These are some of the benefits of achieving target liveweight at calving – but what is the target?

Research has shown the desirable weight at first calving is 85% of mature liveweight. Therefore, for example, if your herd has an optimal mature weight of 550 kg, the target liveweight for heifers at the time of first calving is 468 kg (550 x 85% = 468).



## Achieving target weight

This comes back to management right from birth through to calving:

- Make sure heifers receive adequate quality colostrum as soon after birth as possible
- Feed them 5+ litres of milk per day, provide ad lib concentrate and water
- Wean at the right time – weaning too early gives them a setback which makes it hard for them to reach target liveweight
- Actively manage the heifers when they are on pasture to ensure their target pasture intakes are met
- Monitor growth regularly – every 1-3 months (the more frequent it is the faster any growth issues can be addressed)

## How well are you doing?

As I mentioned at the start, you probably know everything I have just written. But, are your heifers reaching their weight and milk production targets? If you are weighing your heifers on a regular basis, that is excellent. This is the most direct measure of whether you are achieving the target weights. If you aren't weighing your heifers, there are some checks you can do to see how well your heifers are performing, and if you maintain good records you can go back over a number

of years to see whether your heifer performance is getting better or worse. Even those who weigh might be interested in checking their heifers against industry benchmarks (Table 4).

Thank you to everyone who attended the Heifers on Target discussion group meetings and those who have read this article. Hopefully it has reminded you of the importance of achieving heifer target liveweights and you now feel motivated to more actively manage your heifers!

More information is available from [www.dairyaustralia.com.au/heifers-on-target](http://www.dairyaustralia.com.au/heifers-on-target)

**Table 4 Recommended measures of replacement heifer rearing performance**

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%
Production	Relative to mature cows	>85%	<80%
Longevity	% second calvers to first calvers	>85%	<80%
	% of cows 4-8 years old	>50%	<40%

Source: A guide to growing more productive heifers, Dairy Australia

# Big data adds precision to breeding for mastitis resistance

Datagene

Australian dairy farmers can now breed specifically for Mastitis Resistance, a trait which delivers animal welfare and economic benefits.

The Mastitis Resistance Australian Breeding Value (ABV) is one of eight new or updated health and type traits released by DataGene on 14 April. These include:

1. Calving Ease (updated)
2. Gestation Length (new)
3. Mastitis Resistance (new)
4. Overall Type (updated)
5. Dairy Strength (new)
6. Feet and Legs (new)
7. Rump (new)
8. Mammary System (updated)

The three new or updated health ABVs complement on-farm management practices.

## Calving ease

Farmers will now have more Holstein bulls to choose from if they want their cows and heifers to calve easier.

Thanks to the inclusion of genomics in the updated Calving Ease ABV, most Holstein bulls have a Calving Ease ABV, including – for the first time – young genomic sires.

To breed for improved Calving Ease, select bulls with a Calving Ease ABV of at least 103.

## Gestation length

The new Gestation Length ABV gives farmers a breeding tool to manage late calving cows and help tighten calving patterns.

The ABV identifies bulls and cows whose calves are born earlier than their expected due date. Cows that calve earlier are in-milk for more days before re-joining and have longer to recover post-calving.

To breed for a shorter gestation, look for bulls and cows with a Gestation Length ABV of less than zero. Every 1 ABV is about 1 day shorter gestation.

## Mastitis resistance

Farmers milking all breeds of dairy can now select to directly improve the mastitis resistance of their next generation. Even young genomic animals now have a Mastitis Resistance ABV.

Previously the Cell Count ABV was used as an indirect selection criterion for mastitis resistance, but this new ABV draws on three sets of information to directly target mastitis. These include: 305-day somatic cell count, udder depth and clinical mastitis records. The Cell Count ABV continues to be published as it is a useful tool to breed cows that contribute to a lower bulk milk cell count.

To breed replacements with improved mastitis resistance, select animals with a Mastitis Resistance ABV of greater than 100.

## Type

The updated Overall Type ABV has been introduced to help breeders identify animals with higher classification scores, according to DataGene's Michelle Axford.

This change has been reflected in DataGene's latest bull and cow rankings as Overall Type and Mammary system are included in the three indices: Balanced Performance Index (BPI), Health Weighted Index (HWI) and Type Weighted Index (TWI).

The new type traits complete the set of composite traits and this means farmers have an overview of an animal's strengths for rump, feet and legs as well as dairy strength.

The new and updated type breeding values are published for Holsteins, Red Breeds Guernseys and Ayrshires. Type ABVs are unchanged for Jerseys.

The new ABVs are the result of DairyBio research, drawing upon records supplied by Ginfo herds. DairyBio is a joint initiative between Agriculture Victoria, Dairy Australia and the Gardiner Dairy Foundation. We also thank farmers and software providers who supply data used in genetic evaluations.

## Farmer comments

Tim Humphris, Nirranda South, Western Victoria dairy farmer milking 400 including Aussie Reds and three-way crosses (Aussie Red, Jersey and Holstein).

"I certainly consider Cell Count when I look at selecting my bulls, but the Mastitis Resistance ABV will give me more confidence," he said. "To me it's more important to reduce clinical cases of mastitis than have a cow with a lower cell count. We have an 80,000-100,000-cell count, so it isn't really an issue. But I'd really like to reduce the cases of clinical mastitis. The economic impact of a mastitis case is far greater than a cow with a slightly higher cell count."

Trevor Saunders and Anthea Day, dairy farmers at Shady Creek, Gippsland milking 950, predominantly Jerseys, across two farms.

"Mastitis resistance is a significant thing for us," Trevor said. "We were using cell count as one of our key selection criteria, but we will change that to Mastitis Resistance because it brings in more aspects, other than just cell count. For example, the Mastitis Resistance ABV includes a record for clinical cases of mastitis, this makes it a significantly more rounded ABV."

Patrick Glass and family, NE Victoria, milk about 550 cows in a seasonal calving system.

"For us in a seasonal calving situation, using shorter gestation

length sires means cows inseminated in the last three weeks of artificial insemination have a better chance of getting in calf to AI next year. It's because they will have another five-to-10 days between calving and joining and this is a great animal welfare outcome."

For more information contact: DataGene 03 9032 7191 or [enquiries@datagene.com.au](mailto:enquiries@datagene.com.au) or [www.datagene.com.au](http://www.datagene.com.au).

DataGene is an initiative of Dairy Australia and the herd improvement industry.

# WINNERS ANNOUNCED

The winners of the 2020 ANZ Dairy Business of the Year Award and Fonterra Share Dairy Farmer of the Year Award were announced via livestream on Facebook and YouTube during April.

Congratulations to the winners and thank you to all the participants and sponsors. If you would like to view the discussion with the finalists and winners, the videos are available on the Tasmanian Institute of Agriculture's Facebook and YouTube pages.

A Dairy Awards booklet will be released in May.



[www.facebook.com/TasInAg/](http://www.facebook.com/TasInAg/)



[www.youtube.com/user/TasInstituteofAg/featured](http://www.youtube.com/user/TasInstituteofAg/featured)

## 2020 Fonterra Share Dairy Farmer of the Year Award winner

Genaro and Rosselyn Velasquez (share farming with Michael and Cheryl Hughes, Edith Creek)



## 2020 ANZ Dairy Business of the Year Award winner

Grant and Kim Archer, Active Dairies Pty Ltd (Mountain Vale Dairy, Bracknell)



# Dung workers

Lesley Irvine, TIA

Dung beetles are a common sight on many dairy farms. While there are native dung beetles in Tasmania, they are adapted to dealing with the dung of native animals. The dung beetles you see at work with cow dung are all introduced species and may include:

- *Bubus bison*
- *Euoniticellus fulvus*
- *Geotrupes spiniger* (also called "blue bomber")
- *Onthophagus taurus*
- *Onthophagus binodis*

Over the last 12 months, the team at Cradle Coast Natural Resource Management (CCNRM) have been working with dung beetle experts to introduce another species in north-west Tasmania. *Onthophagus vacca* is a spring active dung beetle – a current gap in dung beetle activity in Tasmania. Introducing a new species of dung beetles is not easy – this is the third attempt at introducing *Onthophagus vacca* to the state. Why do we keep trying?

## What do dung beetles do?

All the dung beetles in Tasmania are 'tunnellers.' They burrow into the soil

under dung pads and bury the dung in underground tunnels.

Adult dung beetles drink the juice from moist dung. This juice contains microorganisms (bacteria, yeasts, fungi and protozoa) from the digestive system of animals. These microorganisms provide the nutrition the adult beetles need. Removing the moisture from the dung leaves behind a fibrous mass. The dung beetle larvae feed on the buried fibrous dung which consists of partially digested plant material. The larvae further digest this fibre with microbes in their gut.

## How do they help dairy farmers?

There are a number of benefits dung beetles provide to dairy farmers.

**Reduce pasture fouling.** One of the most visual benefits is dung beetles move most of the dung from the pasture to the soil. This can reduce the amount of unpalatable grass present in a paddock at the next grazing.

**Increased yield.** Studies in laboratories and field trials have shown increased plant growth when dung beetles are present. One study found increased growth in Japanese millet due to the presence of dung beetles was equivalent to the application of 150 kg of nitrogen and phosphorus

per hectare. Another study recorded seasonal grass production at 7.8 t DM/ha with dung beetle activity compared to 6.4 t DM/ha with no dung beetles.

Field studies conducted in Australia compared dung + beetle treatments to dung only treatment and found the dung + beetle treatment statistically showed higher growth. Interestingly, this improvement in growth continued for multiple years when compared to the dung only treatment, which did have improved growth when compared to the control but only for a number of months. Increased plant yields can be attributed to the increased cycling of nutrients from the dung and associated soil structure changes caused by dung beetle tunnelling.

**Increased soil permeability.** Dung beetle tunnels allow water to quickly penetrate the soil, reducing run-off during heavy rainfall events. This effect reduces over time – 12 months after dung beetle activity, the soil has returned to pre-dung beetle state but if there are always active dung beetle populations present, this can be a permanent improvement.

**Reduction in the number of flies.** One of the main reasons the CSIRO introduced exotic dung beetles to Australia was to reduce the number of bush flies. The larvae of bush flies, like adult dung beetles, feed on the manure juice. Once dung beetles remove all moisture from the dung, the fly larvae die as their food source dries up.

Apparently, this has resulted in much lower numbers of bush flies around Australia (*logically, this makes sense but based on personal experience sometimes it is hard to imagine higher numbers of bush flies than what we currently have!*).

One of the most visual benefits is dung beetles move most of the dung from the pasture to the soil.



### **Reduction in animal parasites.**

Studies have shown dung beetles burying manure reduce the numbers of dung-borne parasites such as round worms, flatworms and protozoa (e.g. *Cryptosporidium*). However, whether this has the flow-on effect of lower parasite levels in our livestock is not known and will be affected by factors such as stock management, the parasites life-cycle and prevailing seasonal conditions.

### **Threats to dung beetle survival**

Dung beetles do have natural predators, which include birds and bats, although, populations are usually able to survive fairly high levels of predation. Of greater threat is the use of some particular drenches and insecticides. Most of the 'mectin' family of drenches are toxic to dung beetles, although careful timing for de-worming stock can make these drenches more dung beetle friendly. Good timing is based on understanding the life cycle

of the dung beetle and by applying drench when dung beetles are consuming the least amount of the manure juice. As you would expect, many insecticides are toxic to dung beetles (an insect). If paddocks are sprayed with insecticide keep cattle out of areas sprayed for at least 7+ days (always observe the stock withhold period for any chemical).

There are many benefits gained from having dung beetles on-farm and most of the time we don't need to do anything different to maintain a healthy population.

If you are really enthusiastic about dung beetles, you can download the MyDungBeetle App on iOS and android devices. More information about the app and dung beetles is available from [www.dungbeetles.com.au](http://www.dungbeetles.com.au).

*Find out more about the latest release of dung beetles in Tasmania by contacting Tom O'Malley at Cradle Coast NRM on 6433 8400.*

*Information for this article was sourced from these two books which make great further reading on the topic:*

- *Dung Down Under – dung beetles for Australia by Bernard Doube and Tim Marshall*
- *Ruminations of Poo-ologist – dung beetles in Tasmania by Graeme Stevenson*

# DAIRY DIARY

## MAY

5 May	The Realities of Carbon Neutral Dairy Farming with Richard Eckard, online (DairyTas)
7 May	Managing the milk price Dairy HIGH discussion. Join online at 12 noon: <a href="https://utas.zoom.us/j/97935176984">https://utas.zoom.us/j/97935176984</a>
11 May	Transition Cow Management Course (session 1 of 4), online (DairyTas)
14 May	Dairy HIGH online discussion group (TIA)
14 May	Legendairy Women's Discussion Group, online (DairyTas)
21 May	Effluent need to know, online (DairyTas)
27 May	Water management need to know, online (DairyTas)
28 May	Dairy HIGH online discussion group (TIA)



The situation with COVID-19 changes on a daily (sometimes hourly) basis. We will keep you as up-to-date as possible with regards to our activities. This is easiest through electronic media. If you aren't already a member, join our TIA Dairy Discussions Facebook group. If you do not use Facebook, we are also communicating through our regional discussion group email lists. If you don't receive these emails from us and would like to be added to the list, please contact one of the TIA dairy extension team.

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## Contact us

Dairy HIGH is provided free to all Tasmanian dairy farmers and is funded by Dairy Australia and the Tasmanian Institute of Agriculture (TIA).

For more information, please contact a TIA Dairy extension officer, phone 6430 4953 or email [tas.dairynews@utas.edu.au](mailto:tas.dairynews@utas.edu.au).

Electronic copies of this newsletter are available at [www.utas.edu.au/tia/dairy](http://www.utas.edu.au/tia/dairy).

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