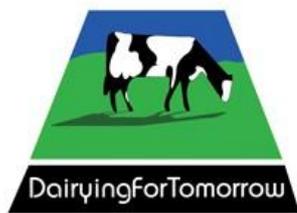


Dairy  
Australia  
Your Levy  
at Work



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## About the newsletter

*This newsletter is distributed bimonthly, and circulated electronically via email. We aim to include exciting and inspiring works that are being done nationally in the dairy on-farm NRM area. A copy of the newsletter can also be found on the Dairying for Tomorrow website*

<http://www.dairyingfortomorrow.com.au>

*We hope you enjoy it, and feel free to circulate to any interested parties. Future contributions are most welcome and can be emailed to us - contact details at end of the newsletter.*

## UPDATE: Future Ready Dairy Systems

Future Ready Dairy Systems is focusing on capturing on farm changes that have occurred in response to climate variability – a constant part of farming in the Australian landscape.

The project is continuing strongly. Many case studies have been compiled to highlight on farm actions to manage the variable climatic conditions seen across the dairying regions over recent years. Training opportunities have been made available to dairy industry service providers.

The Future Ready Dairy Systems project is funded by Dairy Australia and the Federal Department of Agriculture, Fisheries & Forestry's Climate Change Research Program (part of Australia's Farming Future).

Further details about local activities are included in this newsletter.

## Carbon Farming Initiative Briefings

The Future Ready Dairy Systems project has hosted Associate Professor Richard Eckard at two recent events. Richard is a terrific speaker with a wealth of knowledge of Australian dairy systems and global agricultural greenhouse gas emissions research.

Speaking in Gippsland and South Western Victoria, Richard delivered the latest information about the Australian Government's proposed initiative.



ABOVE: (L-R) John Gallienne, Rob Greenall, Richard Eckard, Tony Gardner, Mark Brummel, Tyran Jones (Gippsland FRDS Chairman) & Annette Zurrer attended the Carbon Farming briefing aimed at Gippsland Service Providers.

The recent sessions were well attended with service providers keen to understand the impact of the initiative on individual dairy businesses.

Richard indicated that the scheme is most likely to work with aggregated groups of farmers on a voluntary basis and in its early stages will not impact individual farm businesses.

A comprehensive set of notes is available from [ghayman@dcsi.net.au](mailto:ghayman@dcsi.net.au)

## Test your Knowledge

At the recently held AgFest event in Tasmania, DfT Coordinator Rachel Brown challenged attendees with a quiz. At stake was the chance to win \$1,000 fishing/camping gear. See how you go, for those who need help, the answers can be found on page 8.

### The Future Ready Dairy Systems Quiz

Q1. **Carbon is the building block of life because:**

- It easily bonds with other atoms to form millions of compounds
- Diamonds are a girl's best friend
- It is only found on planet Earth

Q2. **What would be the average temperature on Earth without the *natural* greenhouse effect?**

- 100°C
- 18°C
- +14°C

Q3. **The *enhanced* greenhouse effect is defined as:**

- Human induced addition of greenhouse gases to the atmosphere.
- Release of CFCs to the atmosphere

Q4. ***Climate Futures for Tasmania* predictions indicate our climate patterns will be:**

- warmer and much drier across the *entire* state
- colder across the entire state
- warmer and greater variation in rainfall patterns across the state

Q5. **95% of methane emissions from cows come from:**

- the back end
- the front end

Q6. **Cows produce methane because:**

- methanogen microbes occur in the rumen
- they breathe in a lot of carbon dioxide

Q7. **Which of the following is the most potent greenhouse gas?**

- methane
- nitrous oxide
- carbon dioxide

Q8. **Greenhouse gas emissions are measured in:**

- tonnes carbon dioxide equivalent (tCO<sub>2</sub> e)
- US dollars
- kg C

Q9. **Which produces more greenhouse gas emissions?**

- Boeing 747 flying Sydney to London return
- Driving a Toyota Prado for a year (15,000 km)
- Typical Tasmanian dairy farm (in one year, 400 cows)

Q 10. **Which dairy product has the lowest carbon footprint?**

- Cadbury Freddo made in Tasmania
- Cadbury Freddo imported from UK to Tasmania

## Opportunity for smart phone users

Dairy Australia is keeping pace with new technology and will be trialling the use of an "APPLICATION" or APP for all smart phones (eg, iPhone, Blackberry, Galaxy, etc).

The trial needs 40 dairy farmers and service providers to participate for a 3 month period during 2011.

Each participant will be registered with the project by supplying their name and mobile number. They will commit to using the APP at least twice a week for the duration of the trial period.

The APP will be designed to deliver live feeds to participating smart phones for three key elements:

1. Industry calendar focused on Future Ready Dairy System (FRDS) project activities but also relevant regional events.
2. Interactive short messaging service (like a twitter account) so group conversations by text can occur.
3. Content & information function relevant video, audio, fact sheets, documents, reviews, email exchange etc for APP users to browse in detail at their own discretion (either on their phone or computer/laptop).

The APP will deliver short message notifications (standard text message), a short descriptive title and a link to further details.

APP users should be able to enter their postcode or state of interest re industry events, in order to ONLY receive local information.

This APP will be trialed in NSW, VIC and TAS, and if successful will be extended across the Australian dairy industry.

**To become a participant please contact Dr Jess Jennings on 0423 224 750 / [j.jennings@uws.edu.au](mailto:j.jennings@uws.edu.au).**

## Farmers learn about underground treasures

South Australian dairy farmers are treading more carefully on their soils after learning more about the microbial treasure troves that lurk beneath the

surface, at a DairySA Future Ready Dairy Systems (FRDS) workshop held at Nuriootpa last month.

The biological fertiliser workshop featured leading microbial ecologist, Dr Damian Bougoure, of Victoria's Department of Primary Industries.

DairySA chairperson, James Mann, says understanding what is going on in soils at the micro-level will help dairy farmers implement practical and profitable options to deal with climate change adaptation.

"South Australia's FRDS project has been examining farm systems in the Barossa/Mid North and Murray regions to learn more about grass-based, partial mixed ration (PMR) and total mixed ration (TMR) dairy production systems. Part of the process is looking at what we're putting on our paddocks and seeing how it's effecting the community of micro-organism underneath," he says.

Mr Mann says research being conducted in soil biology is crucial for farmers managing climate variability now and in the future.

"There's so much we don't know about soil micro-organisms and how they're impacted by changes in the climate, and in turn, how that impacts farm productivity. Important research by scientists like Dr Damian Bougoure is giving us an insight into just how significant soil biology is to us."

Dr Bougoure has been studying the complexities of the microbial community in soils for the past 10 years, and is now leading a national project to trial high resolution genomic technologies to monitor soil biology. He regularly tours Australia to share the latest research with producers, agronomists and Landcare groups, and has delivered over 30 soil biology workshops to more than 1,500 people.

According to Dr Bougoure, the known number of soil micro-organism species, including fungi, AM mycorrhizae and bacteria, is much larger than most people can imagine.

“The diversity of micro-organisms in soils is far larger and more complex than, say, plant and animal populations in the Amazon forests. In fact, a single gram of farming soil will contain more than 10,000 different species of micro-organisms. And that’s only covering different species—there could be multiple thousands of each species, so we’re talking big numbers,” he says.

Soil microbes are living organisms that breathe and feed off carbon and carbohydrates in the soil. As part of the feeding process, they metabolise some carbon into humus—stable, long-term organic matter found in soil—but the majority is released as carbon dioxide, causing a dilemma for using farm soils as ‘carbon sinks’.

Over 70 percent of the thousands of known microbe species produce organic acids and/or enzymes that are involved with releasing phosphorus in the soil. So according to Dr Bougoure, if we have healthy, active soil microbes, they will do all the hard work for us.

“To help increase the activity of existing microbial populations, some of the many management factors to consider include managing and correcting soil pH, maintaining adequate and balanced soil nutrients levels, following responsible pesticide use and being judicious about soil cultivations.” said Mr Bugoure

## Riding the Dairy Rollercoaster

Around 40 people attended a dairy business forum at Yarram in Gippsland on Tuesday May 24<sup>th</sup>. The aim of the forum was to discuss managing the dairy farm business in a variable environment.

In recent years Gippsland’s dairy businesses have experienced challenges with wet and dry seasons and fluctuating global markets impacting on farm gate price. These ups and downs make a big impact on the business and make it challenging to manage finances and risk within the business. The forum focused on

managing fluctuating farm finances, business risk and a carbon future.

Colin Wright of Phillipsons Accountants covered the topic ‘Managing Farm Finances on the Rollercoaster Ride’. He spoke about the importance of monitoring monthly cashflow budgets. Colin likened a cashflow budget to the GPS in the car – without it you don’t always know where you are headed. Colin also spoke about making use of the ‘team’ around the farm business – the bank manager, accountant, factory field officer and consultants to work for the best interests of your farm business.

John Mulvany of On Farm Consulting discussed ‘Managing Farm Business Risk in a Variable Climate’ and presented a *checklist* of risks to consider in the farm business. As the dairy business environment remains increasingly volatile business risks need to be assessed and managed. John spoke about the importance of understanding the stage of the business and making management decisions appropriate to broader goals.



ABOVE: Speakers Colin Wright, Judy Johnson (MC), Neil Baker & John Mulvany at the Yarram Business Forum.

Neil Baker from the Macalister Demonstration Farm covered ‘Understanding the carbon future and how it may impact on dairy farm businesses.’ He spoke about a carbon price, what it means and what dairy farm managers can do to prepare for the future.

A lively panel discussion followed the presentations allowing the many farmers, bankers and industry service providers present an opportunity to question the speakers.

## Saving energy in the dairy

Solar power, green clean, heat recovery, wind energy, effluent energy and tips for 'simple things' to cut costs and power use in the dairy were outlined recently at a demonstration day at Wangoom, SW Victoria.

The Future Ready Dairy Farms (FRDS) event at A H Adams & A C Beckel's 'Pine Hill Dairy' featured a series of guest speakers including Department of Primary Industries scientists and representatives of renewable energy companies.

DfT Coordinator Louise Sheba said farmers and service providers benefited from hearing and seeing how new technology and innovations could be put to good use on local farms. The program covered a variety of new and emerging technologies and those attending got to inspect some of the recent additions at the Wangoom farm.

Pine Hill Dairy has installed a Green Cleaning system. This new technology, its operation, energy savings and long-term cost benefits were explained to 50 people in attendance.

An energy audit and Dairy Gas Abatement Strategy (DGAS) calculation were also carried out on the farm. Attendees were encouraged to use the DGAS system to gain a better understanding of their greenhouse gas emissions.

Murray Goulburn FarmCare project officer Sam Dalziel said overseas markets were demanding more information on the environmental footprint left by food producers. "Using the DGAS system will help you to understand what gases your farm produces and starts you thinking about abatement strategies," Mr Dalziel said.

DPI Ellinbank Research and Extension Scientist Darold Klindworth explained how 'simple things' could be done at no cost in the dairy to reduce energy waste and costs, particularly in cooling milk and heating water

Gippsland DPI Land Management and Sustainability Services Project Manager Barrie Bradshaw explained how effluent could be used for renewable energy for both small and medium sized dairies.



*ABOVE: DPI scientist Darold Klindworth addresses the group in SW Victoria*

Richard Johnston from The Wind Turbine Company in Melbourne spoke on small scale wind energy options for farmers. Solar hot water advantages and benefits were highlighted by Adrian Mills from Solarhart. Paul Hemming provided an outline on how a heat transfer system can save money.

For an information pack please contact Louise Sheba 55 922199.

## Silage Plastic Recycling Solution

An estimated 150,000 to 200,000 tonnes of plastics go onto farms in Australia every year but less than 3 per cent is being recycled. The vast majority of the plastic waste ends up in council landfills, is buried or burnt.

A new sustainable disposal system for plastic waste aims to make a significant impact on that waste.

Plasback provides a solution to that disposal issue and environmental nightmare and is giving farmers the opportunity to recycle their silage bale wrap and silage pit covers, with more products likely to be added in the future.

Plasback is a win for farmers, the environment and local councils. It provides long-term, low-cost solutions for farmers to dispose of their plastic waste, will minimise the amount of plastic waste going to landfill, and ensures the products are recycled.



ABOVE: Marni Barber (DemoDAIRY), Mike Waite (Chairman Dairy NRM Reference Group) and Ed George (Plasback Project Manager).

The Plasback initiative is now being expanded around Victoria with the appointment of advocates to promote the system, Stuart Longley for the Gippsland area and Goulburn Valley and north-east regions, and Louise Sheba and Marni Barber for south-west Victoria. The advocacy project was funded by a grant from the Sustainability Covenant partnership between the Plastics and Chemicals Industries Association (PACIA) and EPA Victoria.

Farmers bag unwanted plastics into Plasback liners and drop them at council transfer stations. The liners, which are coloured for a specific plastic waste stream, can be purchased through Murray Goulburn Trading for \$79.95 for a box on 25 which will recycle the wrap off more than 400 round bales of silage.

Environmental manager for Tapex Pty Ltd, Ed George, said the system was changing existing unsustainable disposal practises by giving farmers a cost effective, viable alternative for recycling.

Plasback features a specific bin and liner arrangement that Ed says has some distinct advantages.

“The bin and liner system ensures a segregated waste stream. Only silage wrap can go in the liner. As the liner is clear, foreign matter and contamination are easily detected. Handling costs are reduced and the liner is itself linear low density polyethylene, so it can be baled and reprocessed as part of the waste.

“Just separate the net, shake out the wrap, roll it into a ball and stuff it in the liner.” Each liner holds between 15 and 20 wraps. The wrap does not have to be ‘clean’,” he said.

A box of liners will recycle over half a tonne of silage wrap which is nearly two years usage on the average dairy farm. The cost of turning what was previously waste into a useful resource is about \$50 a year.

The plastic is recycled at facilities in Melbourne, and becomes the primary ingredient in an alternative to plywood sheet called Tuffboard. It can be drilled, sawn, routed and nailed just like timber.

Ecklin dairy farmer and Dairy NRM Reference Group Chairman, Mike Waite, is in full support. “This is something I will look forward to supporting as recycling farm plastics is a far better outcome than putting it into landfill,” Mike said.

“If we want to keep the price of plastics down we need to recycle as plastic becomes more expensive to produce. Although there is a cost involved in using the Plasback system it seems to work out as other methods of disposal also cost.”

Farmers can find more information about Plasback at [www.plasback.com.au](http://www.plasback.com.au) or call 03 93574866.

## FRDS blogspot reaches across the world

As more people use technology in their farm businesses and computers are part of daily activities. The use of social media and internet technology is expanding.

Information hungry dairy farmers are turning to the internet to keep up to date and for a growing number ‘Twitter’, ‘Facebook’ and other options are breaking down what is often a socially isolating profession.

In the ‘Twittersphere’ there is quite a ‘community of dairy farmers across the globe who are ‘connecting’ on a daily basis!

For those who like to use the internet, the Gippsland FRDS Regional Reference Group has been trialing a blogspot. Similar to a website, this can be updated regularly and is able to link the user to many other on line resources.

The site is <http://futurereadydairy.blogspot.com> To date over there has been over 700 visits to the site from Australia, the US, UK, Germany, Russia, Malaysia and several other countries!

## Smarter use of Nitrogen

Two projects investigating nitrogen management on Australian dairy farms were completed in 2009/2010. Both projects indicated that gains in N use efficiency are needed. The projects were The Greener Pastures project, conducted in Western Australia, and a national project entitled "Accounting for Nutrients on Australian Dairy Farms."

"Accounting for Nutrients" quantified farm level imports and exports for all major nutrients (N, P, K, S, Ca and Mg). It examined the redistribution of nutrients between paddocks and established the time cows spent in different management zones on farm. The forty-four dairy farms studied covered the range in environments and management systems used for dairying in Australia.

Nutrient imports were assessed in feed supplements, level of nutrient applied in fertiliser, nitrogen fixation by legumes in pasture, nutrients in irrigation water and in rainfall plus nutrients imported through livestock. Nutrient outputs were assessed in milk, livestock leaving the farm and feed exported off-farm. Monitoring and sampling commenced in February 2008 and occurred over 12 months.

Import of all major nutrients was in excess of export in conventional farms that used fertilisers. In contrast, organic farms typically removed more soil P than applied. Of note was the surplus of N across all dairy units. This ranged from 47 kg N/ha for dairies based on either conventional or organic farming principles to as much as 600 kg N/ha for a dairy farm with 91% of the pasture irrigated and 61% of the feed supplied to cows purchased off-farm. Twenty-one farms had N surpluses in excess of 200 kg N/ha.

Another important measure is the percentage of N imported that is exported in milk, termed here as the whole-farm N use efficiency as outlined in the following equation:  $(N \text{ in milk} / \text{total N imported}) \times 100$

Whole-farm N use efficiency was as low as 14% and as high 50%; averaged across 41 farms it was ~28% of the N imported.

How can the imported N be used more efficiently? One strategy could be to sharply reduce inputs of fertiliser N and grain N. However, milk production in the 'Accounting for Nutrients' study was strongly

related to N input and it is conceivable that a blanket reduction in N input could impact negatively on profitability.

What is required is smart N use where fertiliser N inputs to paddocks or zones within paddocks are adjusted to take into account the capacity of soil to supply N or inputs are adjusted in accordance with the capacity of the land unit to grow pasture.

Another strategy is to recycle nutrients excreted by cows. The Accounting for Nutrients project showed that on average cows spent 74% of their time in paddocks, ~2% in the dairy shed and another ~10% in the yards with the balance of time in laneways, holding areas and pads where these are used. For the ten dairy farms used in the 2009 study, on average, 7000 kg of N may have been in shed effluent assuming 12% of N fed to cows was excreted in the milking shed and associated yards. This is an invaluable source of N.

A key challenge is to better recycle N excreted onto land during periods when there is no live pasture to utilise nutrients, and where there is a risk of N loss following the onset of winter rainfall. On-farm use of high nutrient requiring fodder systems needs examination.

*Contributed by Sam Taylor, DfT Coordinator WA*

## Smoothing the Milk Production Roller Coaster

North QLD dairy farmers are all too familiar with the big autumn dip on the milk production roller coaster, but Cyclone Yasi and widespread flooding made this year's ride a screamer!

While this year's events were thankfully out of the ordinary, many farmers are still looking for ways to brace themselves for the more usual late summer and autumn challenges, and Paul Roderick is one of these farmers.

The Roderick family hosted one of the four "Sustainable Autumn Milk Production" field days held across southern Queensland on their 240 ha farm near Harrisville.

Like many dairyfarmers Roderick's milk production comes under pressure in February and March mostly due to lower dry matter intake by the milking herd as

result of the heat and humidity, and in the longer term conception rates are also affected.

Paul has introduced a number a strategies to improve autumn milk supply, 'but we're not aiming for a totally flat milk supply,' said Paul. 'It's more economical to stay within the allowable tolerance.'

Feeding strategies are one of the keys to improving production. 'We make the best quality silage possible to feed throughout the year,' said Paul. 'Silage makes up the bulk of the diet in autumn when pasture quality drops and this helps to maintain milk production at reasonable rates. Protein meals are incorporated into the silage and fed out using a Bobcat.'

'The diet usually consists of around 6-8 kg/day of grain fed in the dairy, 8-9 kg silage and 3-4 kg of high quality grazing,' said Paul. 'When there is no suitable pasture, grazing is replaced by 1-2 kg of lucerne hay. The diet formulation is mostly intuitive, but nutritionists are consulted and the NutritionPlus workshops have been useful.

'Lucerne and Lablab are preferred over forage sorghum,' said Paul. 'Forage sorghum is difficult to manage in a wet year because it grows rapidly and loses quality. Lablab has a longer window when at optimum quality. About 16 ha of lucerne is grown to be either grazed or baled. Bloat is managed by feeding silage first and adding Rumensin to the grain. Sometimes bloat oil is also added to the trough water.

'Corn is preferred for summer silage however forage sorghum is grown when less irrigation water is available. If the corn can't be ensiled in the 2-3 week window of optimum quality it is left for grain.'

'We've also got a lot smarter with irrigation,' said Paul. 'We understand water scheduling better and can grow more dry matter with less water.'

'Calving is reasonably even throughout the year but slightly fewer calves are born in November and December,' said Paul. 'During the hotter months conception rates are down, and stressed cows show fewer signs of being on heat. At this time of year we use a good quality bull.'

Reproduction is closely monitored and recorded using the *Westfalia Dairy Plan* software. Joined cows are

pregnancy tested every 6 weeks, and post natal tests are conducted on every fresh cow.

A number of strategies are used to manage heat stress. 'A shade shed was built in 1992 following a severe heat wave which affected many of the local dairy herds,' said Paul. 'This has made a huge difference to both milk production and cow comfort.'

'Cows also receive a good wetting under 4 garden sprinklers in the new dairy yard,' said Paul. 'Good airflow is important and fans would be ideal for this. In hotter conditions the afternoon milking is also delayed by 30 minutes.

The "Sustainable Autumn Milk Production" field days were funded by Dairy Australia and the Australian Government's Climate Change Research Program through the Future Ready Dairy Systems project.

*Quiz answers:*

*1a, 2b, 3a, 4c, 5b, 6a, 7b, 8a, 9a, 10a*

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