

Dairy
Australia
Your Levy
at Work



ANNOUNCING Future Ready Dairy Systems

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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.

Dairy Australia has been successful in obtaining funding from the Federal Department of Agriculture, Fisheries & Forestry's Climate Change Research Program (part of Australia's Farming Future).

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

The project will contribute to ensuring that there are viable, practical and profitable options for dairy farmers around climate change adaptation and mitigation.

A national network of 15 sites in Australia's key dairying regions will show case adaptation and mitigation strategies in action, on farm.

The sites will be selected and 'managed' by a regional reference group in each of the 8 dairy regions to ensure that the demonstration sites are focussed on issues that are locally relevant. The Regional Dairying for Tomorrow Coordinators will work closely with the reference groups to manage project activities.

Information resources will be developed and disseminated widely through the national, state and local partners, including milk processors and Landcare networks.

Along with the on ground activities will be another component of the project that is still under development.

The Victorian Department of Primary Industries in conjunction with Melbourne University will be working to validate the next generation of options for dairy farmers to manage climate variability and potentially, the need to reduce greenhouse gases. This work will be conducted at DemoDairy in Western Victoria and Dookie in Northern Victoria.

For further information about local activities contact your Regional Dairying for Tomorrow Coordinator.

DfT Staff Update



L – R: Rachel Brown (Tasmania), Scott Birchall (Murray Region, Victoria), Sam Taylor (Western Australia)

Western Australia

In the west, Sam Taylor has taken on the Dairying for Tomorrow role. Sam is a consulting agronomist who works with farmers in the South West of the state. He has extensive experience in providing technical advice on crops and pastures, grazing systems, fertiliser management and animal production in a farming systems context.

Co-ordinating the Nutrient Management Systems project during 2009, Sam helped farmers identify changes that could be made to their fertiliser programs, many of which resulted in considerable \$/ha savings. More recently Sam has been working on increasing the use of effluent on farm.

Sam can be contacted on 0429332593 or email sam@agvivo.com.au

Murray Region, Victoria

Scott Birchall has taken on the Dairying for Tomorrow Regional Coordinator role for Murray Dairy. Scott is an agricultural engineer and has worked on a range of dairy projects over the last 16 years covering areas such as environmental management plans, irrigation system design, and the development of feed pads. He was one of the authors of the Effluent and Manure Management Database and has recently been supporting NCDEA and DPI Victoria to deliver training for service providers in effluent system design.

In the short term, Scott is looking forward to kicking-off the Future Ready Dairy Systems for the Murray Dairy region.

Scott can be contacted on 03 5821 0603, 0458 210 604, or scottb@agsystems.com.au

Tasmania

Dairying for Tomorrow has a new face in Tasmania. Rachel Brown has taken over from Mark Smith. She has joined the team to deliver the Tasmanian component of Dairy Australia's 'Future Ready Dairy Systems' Project. Rachel will be working closely with Mark Smith at DairyTas and her Regional Reference Group to assist Tasmanian dairy farmers develop their resilience and adaptive capacity for change.

Rachel is an agricultural consultant, working with Agricultural Resource Management. She works on a range of natural resource management, climate change and water resource projects and has a strong background in agricultural research, extension and training. Rachel lives at Port Sorell on the NW Coast of Tasmania with her husband and two children. She loves the Tasmanian wilderness, bushwalking and mountain biking and enjoys gardening, cooking and reading.

Contact Rachel on 0419 528 428 or email rbrown@agrm.com.au

Queensland – Zero Tillage & Controlled Traffic

Controlled traffic and zero tillage were the focus of a Dairying Better 'n Better field day at the Mullins family dairy farm, east of Allora recently.

Farmers came to see the changes Andrew and Chris Mullins have made to their operation, and to hear from controlled traffic farming (CTF) and zero tillage specialist, Mr Tim Neale.

The Mullins brothers milk 160 Holstein cows on their 340ha property. It's a successful partnership in which daily milk production ranges between 29L to 31L.

The milkers are fed a total mixed ration, and the operation relies heavily on home grown silage based on corn, oats and barley. Producing silage and forage involves several passes of heavy machinery and the removal of large amounts of organic material leaving the soil bare and compacted, leading to a whole range of problems.

Andrew and Chris were experiencing difficulties with their sloping country 'washing away', requiring them to continually push up banks in the aftermath of

summer storms. "But there's not much fun in spending money doing that all the time," Chris said.

Increased runoff and poorer infiltration rates also meant less soil water was being stored for subsequent crops. The challenge was to develop a system that improved soil condition and reduced erosion on the sloping country.

When the Mullins family felt the need to upgrade their machinery and farming system they turned to controlled traffic farming specialist Tim Neale for advice.

After discussing the issues with Andrew and Chris, Tim used GPS technology to prepare a contour map and a controlled traffic layout for the farm. The aim was to have all wheels running on the same tracks to save fuel and to keep the soil in good condition for crops. A 6m wide system based on 2m wheel centres was selected for the Mullins situation. Fortunately the 18.5m boom spray fitted the system perfectly, and the tractor wheels were easily adjusted to 2m.



Above: Field Day Attendees inspect new equipment at the Mullins family dairy farm, east of Allora.

Andrew and Chris purchased a new Excel no-till planter. The planter is a key element in any move to adopting zero tillage and CTF. Tim Neale believes the benefits from zero tillage and CTF combined far outweigh the initial set up costs, and on his calculations the Mullins brothers will be in front within a year.

Andrew and Chris are planning to introduce GPS guidance in the future to further improve farming efficiencies.

The Mullin's received assistance through the Queensland Dairy NRM Program to assist with the implementation of the zero tillage and CTF system. Funding was received through the Condamine Alliance under the Caring for Our Country program.

Further information from Rick Kowitz 0732362955 or email rkowitz@dairypage.com.au

Calculating Your Emissions Can Make a Difference

Key points

- Production improvement options are linked to greenhouse gas emissions reduction.
- The dairy industry greenhouse gas calculator is available online www.dairyingfortomorrow.com
- Consider emissions reduction options that lead to productivity gains or have cost benefits.

Trevor Thomas from Longwarry, Victoria has run his family's farm since 1992. A third generation dairy farmer, Trevor accepts that climate change is a reality, and sees both adapting to a drier and warmer climate and understanding the sources of greenhouse gas emissions on his farm as critical to managing his business risk.

Trevor has been adapting his practices to help manage the changing conditions on his 150 hectare property where he milks 200 cows. "The bottom line is if you don't get the rain, you don't get the grass". As a result Trevor has developed a range of strategies in pasture and crop management to help manage climate variability.

Trevor has undertaken a greenhouse emissions calculation, in order to understand the emissions profile of his farm. Greenhouse gas emissions are essentially a loss of energy from the farming system, and if conserved can increase production efficiency on farm. Trevor said that it is "unlikely that I am carbon neutral" and wanted to test this assumption.

The emissions profile on Trevor's farm was calculated using the Dairy Greenhouse Abatement Strategies (DGAS) calculator, available on the Dairying for Tomorrow website. DGAS allows dairy

farmers to find the sources of greenhouse gases for individual farms and to see the direct impact of farm activity on the level of emissions.

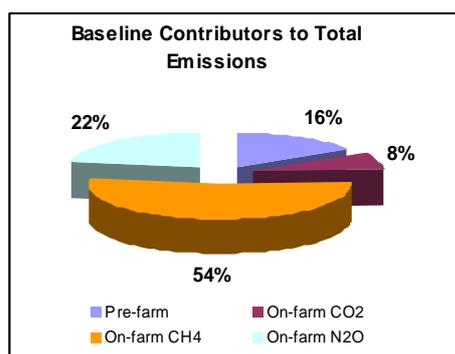
Dairy farm emissions can be calculated in two ways - Tonnes of carbon dioxide equivalent (CO₂e) per tonne of milk solids (MS) (where MS refers to milk fat and milk protein) or tonnes of CO₂e per hectare. We use the term CO₂e as a standardised way to describe all greenhouse gases. In the DGAS calculator methane is assumed to have a greenhouse warming potential 23 times that of carbon dioxide (CO₂) while nitrous oxide has a greenhouse warming potential of 310. The total greenhouse gas emissions for Trevor's farm are seen below.

Table 1: Total greenhouse gas emissions of Trevor Thomas' farm compared to Gippsland dairy farm ranges

Emissions	Tonnes of CO ₂ e per tonne of Milk Solids (MS)	Tonnes of CO ₂ e per hectare
Trevor Thomas' farm	17.5	9
Gippsland average #	13.6	10.1
Gippsland Range #	10.4 – 16.1	4.9 – 17.7
Victorian average #	13.5	9.2

Figures calculated by University of Tasmania project Accounting 4 Nutrients (Pers comms. K.Christie, 2010)

The key sources of emissions on Trevor's farm were methane (54%), from rumen fermentation, and nitrous oxide (N₂O) (22%) derived from fertiliser, dung, urine and indirect sources from leaching and ammonia. Embedded emissions (or emissions from pre-farm processes) from bought in feed, such as hay and silage, accounted for 16% of the total, whereas energy from fuel and electricity contributed only 8% of total emissions on farm.



Besides continuing to improve average cow productivity (i.e. through improved pasture management), actions which can help Trevor reduce his farm's methane and nitrous oxide emissions include:

- **Extended lactation:** can reduce the energy demand of cows and methane by approximately 10%. Extended lactation has other benefits, such as reducing peak workload, cow health problems (due to less calving) and less heifer replacements are required. Milk in the extended lactation phase is higher in milk solids, making the milk more valuable per litre and there may be price incentives for milk produced outside peak supply months. Trevor has always considered extended lactation as an option for his herd, and has selected breeds suited for extended lactation.
- **Dietary oils:** Research has shown that feeding oils in a cow's diet can reduce methane emissions. For every 1% of oil introduced in the diet (maximum 6%) there will be a 3.6% reduction in methane emissions. Introducing oils in autumn and summer, when pasture fat content is lower, is a way to reduce methane at no cost to production. "Dietary oils should be easy for feed companies to add into the diets" said Trevor.
- **Nitrification inhibitors:** coated fertilisers can reduce nitrous oxide losses by up to 40%. Reviewing the rate, timing and source of fertilisers on farm can also reduce nitrous oxide emissions.

"By looking at these strategies I hope to contribute to a reduction in greenhouse gases, which will hopefully be a win for the environment and a win for me in terms of cost and production at the same time" Trevor commented.

Acknowledging that the climate is changing and that managing emissions is a challenge for dairy farmers Trevor pointed out that, "we definitely have to change – emissions reduction and production improvement options on farm are all linked together".

Through the Future Farming Strategy, the Victorian Government is providing information to enable farm businesses to plan for climate change. View more Farmers Taking Action case studies online at www.dpi.vic.gov.au/climaterisk

Further information contact Zita Ritchie DPI Victoria 0428 313 742 or email zita.ritchie@dpi.vic.gov.au

Benefits of efficient effluent management

Trevor and Brendon Ashby of Allendale East in south eastern South Australia have had a long association with the land; they are fourth and fifth generation farmer's respectively. Both have seen a lot of changes within the dairy industry.

Their "Caveview" property milks 320 cows. The annual milk production is 2.2 million litres. Brendan says "our farm is a medium to high input system aiming for maximum production, while keeping infrastructure and labour costs low".

Over the past 10 years Trevor and Brendan have both recognised the benefits of undertaking nutrient budgets. With the rise in fertiliser costs about 18 months ago now, they both knew in order to keep their farm's pasture production at its maximum potential, their effluent would have to play a bigger role in their nutrient budget.



Above: Brendan Ashby standing in front of the solid separator on his farm at Allendale East in south eastern South Australia

Together they sat down and developed a plan as to how they could revamp their effluent system, to incorporate their farm as a whole, instead of a couple of paddocks near the dairy with a Vaughan effluent sprinkler. One of the main issues Brendan said, "Was the liquid and solids were pugging our paddocks causing pasture deterioration, so we installed a separator and large pond to elevate this issue".

The Ashby's have installed a simple, low maintenance system. The keydoller separator,

separates the solids from the liquid in two stages; one, over a screen which is diverted to the pond for irrigation use; and two through a roll press on the front of the machine which is returned to the main sump pit. All of the effluent is retained on the property. The liquid is pumped from the pond over the irrigation season through two centre pivots. The solids are collected under the separator in a bunker. These are spread on irrigation and dryland areas.

Depending on soil and plant tissue tests conducted by their agronomist consultant Susan Hasse, Brendan said "We target deficient areas around the farm with solids thus allowing for efficient spreading of nutrients around the property". "Since installing the new system we have also reduced our fertiliser bill by some 25 to 50% during the irrigation season", Brendan commented.

The Ashby's completed a DairySAT a few months ago and said that it was a good check to see if they were on track as they could check their farm practices with best management practices. The checklist has provided them with direction for their future plans.

This project is funded by the Department of Agriculture Fisheries and Forestry: Caring for our Country program and supported by DairySA.

Further information: Kylie Boston (DFT Coordinator) ph 0407 231 547 or email kylie@advantageag.net.au

Nutrient Filter Pond- DemoDAiry

Students from the School for Student Leadership Gnurad Gundidj campus have been visiting DemoDAIRY regularly. Assisting with water testing activities, the students gained an insight into a technology which is being trialled at DemoDAIRY.

The Nutrient Filter Pond project (funded by Glenelg Hopkins CMA, Drain Tech and Corangamite Shire) aims to reduce nutrient runoff through the farm. By trapping run off in the pond before it enters the continued farm drainage lines it is hoped that some of the nutrient levels can be reduced.

Sub-surface drainage is a necessity for efficient farming in areas where wet soils are common. Nowhere is this more pertinent than in the high

rainfall grazing enterprises that are based in the heavy soil districts of South West Victoria. These grazing systems are inherently “leaky” in that high nutrient inputs and high animal by-product outputs are placed into an environment that has high and intense rainfall. This can lead to high rates of surface and sub-surface flows from paddocks to local watercourses.



Above: Students taking water samples at DemoDairy

The constructed nutrient filter ponds aim to intercept and treat nutrients before drainage water (or run off) reaches a stream or water body. Constructed ponds for this purpose can be located within surface drains or at the outlets of the drainage network of either surface or, more commonly, of sub-surface drains.

The use of low nutrient carbon-rich supplement such as woodchips can markedly increase the nitrate removal. Woodchip filters can remove and immobilise a proportion of the nitrogen passing through them, and provide a slow-release of organic matter that promotes bacterial conversion of nitrogen to nitrogen gas. These carbon rich anaerobic environments are excellent at converting a high proportion of nitrogen to inert N₂ rather than the greenhouse gas N₂O. Constructed ponds/wetlands are most efficient where flows variations are not extreme and nitrate loadings are not excessive, so they should be seen as a buffer and not replace sound management of grazing, nutrient and effluent application on drained land.

DemoDAIRY’ nutrient filter pond system comprises of a 40 cubic metre wood chip filter leading to a 200 square metre wetland utilizing reed-bed

technology for aerobic/anaerobic water treatment.

In 2009 Drain Tech completed the installation of the wood chip filter and construction of the Nutrient Filter Ponds. DemoDAIRY received funding from Corangamite Shire and Glenelg Hopkins CMA to begin the planting of the reeds to uptake the residual nutrients. With the help from Conservation Volunteers Australia, *Carex tereticaulis*, *Carex appressa* and *Carex tasmanica* were planted in the ponds, with *Lomandra longifolia* and *Leptospermum langierum* planted on the higher ground. Drain Tech also donated *Phragmites australis* which was planted at the site.

The first water quality testing has been completed with the results confirming that the system is filtering a level of nutrients from the water. Further water testing is required over the coming winter months to provide a more comprehensive data set.

Further information from Louise Sheba 0409505686 or email louise@demodairy.org.au

“Chemical safety: easier than you think”

Travis Telford a dairy farmer near Mt Schank in the lower south east of South Australia, has recently completed the Dairy self assessment tool (DairySAT). Following the section on dairy chemicals he commented, “chemical safety on dairy farms is much easier than you think”.

Travis went through the DairySAT process with trained facilitator Janice Perry. An action point from the process identified that improvements could be made to chemical storages and training of staff in chemical usage on the Telford’s family farm, Mundoolun Dairying.



Above: Travis Telford at the new chemical storage shed.

Mundoolun Dairying Pty Ltd milks 1750 cows on forage base irrigation. The annual milk production averages at 9,000 L per cow and around 650 milk solids per cow. The property is a split calving herd, 65% in the spring and 35% in autumn calving. Producing high quality home grown forage is the foundation to the Telford's farming system.

Travis is a member of the South East Regional Dairy Committee and was very interested in updating knowledge of chemical safety and storage. Mundoolun Dairying employs 11 staff along with family members so safety is an important part of their business.

The Dairy for Tomorrow project ran a successful training day at Mundoolun Dairying aimed at improving chemical knowledge and chemical handling skills for employees. Travis had his employees attend and commented "safety training in chemical handling is critical for a safe workplace". The day used an agronomist, vet and a field services officer to explain the following points:

- Learn about chemical safety
- Reading chemical labels
- Correct animal health application
- Handling dairy chemicals in the dairy shed
- Record keeping
- Storage of chemicals

"Employee safety is very important to us. To train our staff in chemical safety was a top priority. We do all our own spraying so to have a chemical shed with all the correct equipment is vital to achieving a high quality job."

"The action points and information provided during the DairySAT was very helpful in sorting out what was required to achieve a safe workplace", Travis said. I didn't realise that it was that easy, it was just a matter of understanding what our requirements were. We now have a purpose built shed with good access to water for mixing chemicals." He concluded by saying that they now believe that they have a much safer workplace.

This project is funded by the Department of Agriculture Fisheries and Forestry: Caring for our Country program and supported by DairySA.

Further information, Kylie Boston (DFT Coordinator, SE SA) ph 0407 231 547 email kylie@advantageag.net.au

Dairy Moving Forward

Dairy Moving Forward (DMF) is an initiative to develop a national pre-farm gate research development & extension (RD&E) strategy and capability plan for the Australian dairy industry. DMF provides the dairy industry's contribution to the national Primary Industries Ministerial Council (PIMC) endorsed process of establishing national RD&E strategies for the primary industry sectors.

The DMF final plan will be made up of three modules;

- Module 1 will identify priority outcomes and the goals and objectives for dairy RD&E. It will also deal with the management of RD&E capability to meet current and future needs. The five priority areas within Module 1 are Resources, Farm Business Systems, Animals, People and Feedbase.
- Module 2 will identify approaches to align dairy RD&E investment to effectively implement the strategy and capability plan.
- Module 3 will focus on practice change to build capability for the future, with particular emphasis on improved extension.

In March 2010 the DMF steering committee identified six key outcomes for the Resources component of the DMF plan for development into comprehensive strategies. The six key outcomes are:

- An agreed industry pre farm gate sustainability reporting framework;
- Increased industry confidence to manage climate change;
- Increased industry capacity to reduce farm greenhouse gas emissions;
- Long term sustainability of nutrient use through greater understanding of nutrient loss pathways;
- Improved extension of nutrient management principles and practices; and
- Increased profit per ML of irrigation water used in the dairy industry

Over the past few weeks workshops made up of industry 'experts' and relevant stakeholders have been held for each of the six outcome areas. These workshops have identified; potential strategies and

key investment (RD&E) areas; synergies between NRM & CC RD&E priorities and other program priorities and key capability gaps (people and resources (including financial)).

The output from the workshops will be used to develop a dairy industry resources RD&E plan. It will be available for comment by the end of September.

If you would like further information about the Dairy Moving Forward process please contact Cathy Phelps on 03 9694 3730.

Funding for Moreton Bay

THE Queensland Dairyfarmers' Organisation has welcomed the Federal Government's commitment to the dairy industry and the environmental area of Moreton Bay through the Caring for Our Country program.

It was recently announced that QDO was among two successful grant recipients for projects that will improve water quality in Moreton Bay Catchments.

The funding is for \$299,500 over three years for "Cows on the Coast – Dairying Better 'N Better for Moreton Bay" and will assist farmers in managing soil and nutrients as well as preventing erosion in local rivers and creeks.

QDO president Brian Tessmann said the aim of the project was to improve water quality in waterways, with the mutual benefit of developing farm practices and benefiting the Moreton Bay catchment environment.

"We know that Moreton Bay and its catchments are sensitive environments," Mr Tessmann said. "We also know the catchments are important farming regions for fresh produce for the increasing population in southeast Queensland.

"The priority catchments extend through the Logan and Albert rivers, and up through the Bremer and Lockyer valleys. These areas are important dairying regions for Queensland, so this project will work with farmers in the region to

implement practices that improve water quality that would eventually flow toward Moreton Bay.

"Dairy farmers are already good environmental stewards. This funding will help farmers lift the bar even higher."

The funding announcement also committed \$1.5 million over two years to South East Queensland Catchments Ltd for Targeted Works to Reduce Sediment Export to Waterways Entering Moreton Bay. Work is expected to be completed by 30 June 2013.

Further information from Rick Kowitz 0732362955 or email rkowitz@dairypage.com.au



Dairying for Tomorrow

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