



## **Countdown Downunder 2001–2004**

# **Building industry capacity to control mastitis and manage milk quality**

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**Project no. HP10804**

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*Countdown Downunder 2001-2004 Building industry capacity to control mastitis and manage milk quality* is an original report written by Pauline Brightling, Anne Hope, Andrea Thompson and Rod Dyson for Countdown Downunder.

**About the authors:** Pauline Brightling was leader of Countdown Downunder from its inception in 1998 until early 2004 when Rod Dyson took on this role. Anne Hope and Andrea Thompson provided scientific and communication support to the project throughout the second phase (2001-04).

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# Foreword

In mid-2005, the Australian dairy industry identified the need to 'lift the bar' dramatically on its extension and learning systems as a high priority.\*

As the industry's investment in extension and learning expands, it is especially important to reflect on the experiences of a project such as Countdown Downunder, which is directed towards industry-wide goals, has a multidisciplinary cast and has been operating for six years.

We have written this report on the second phase of Countdown (2001-2004) to share our reflections on the processes behind building industry capacity to manage a core element of dairy production and profitability – on-farm milk quality management and mastitis control. This phase of Countdown has focused intensely on helping farmers use best practice. We have delivered training, supported advisers and continued to refine and promote the Countdown recommendations.

The results have been terrific. The Farmer Short Course has been the key to building farmers' skills and confidence. Since 2001, more than 1,800 farmers have participated in this course and made enduring changes to their management routines and practices.

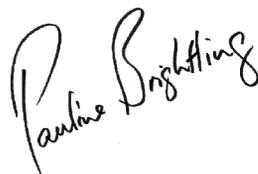
The Farmer Short Course has been delivered by a team of 46 trained advisers throughout the regions. Their ability to motivate, inform and support farmers underpins much of the industry's long-term ability to control mastitis. Many of these people are now also involved in delivering dairy programs such as InCalf and Taking Stock, so the skills they developed with Countdown have extended to other fields.

During this phase of Countdown we have completed two major research projects. The *Countdown Downunder Mastitis Model* has, for the first time, provided comprehensive information about the economics of mastitis control for Australian farms. It is clear that even farmers who are achieving premium milk payments can financially benefit from lowering their annual average milk cell count. Research following the progress of individual farmers in the 18 months after they completed the Farmer Short Course provided insights to help farmers adapt technology, information and management skills to their own circumstances.

In early 2004 I left Countdown Downunder to co-ordinate the industry-wide Dairy Moving Forward initiative. I have been able to apply many of the principles developed through Countdown in designing that program, especially the power of one-to-one interactions to enable change, the importance of dairy farmers having access to capable service providers, and the need to describe the flow of benefits and have broad industry alignment.

This report contains our reflections on the outcomes achieved between 2001 and 2004. We hope you find it interesting.

Cheers



**Pauline Brightling**  
**Project Leader 2001-04**  
**Countdown Downunder**

\* Australian Dairy Industry Priorities for collective industry action for the farm sector, November 2005

# Acknowledgements

As with the first phase, Countdown Downunder is the result of efforts by a large number of people. We thank all those who contributed to the advances made during the second phase (2001-2004) by providing strategic direction, delivering training and key messages to target audiences, developing new project elements and providing critical feedback to the system.

The focus of the project and the quality of its outcomes has been guided by representatives of peak industry bodies through the Australian Mastitis Advisory Council. Our thanks to all past and present members of the council for their commitment to keeping the project activities aligned with industry needs – namely Daniel Abernethy, Jeff Andrews, John Bywater, Jeremy Cocks, Lee Fitzgerald, John Furphy, Rob Greenall, Alison Gunn, Cathie Harvey, Terry Hehir (Chair), Stuart Hodge (Chair), Ian Hubble, Wes Judd, Jakob Malmo, Graeme Mein, Chris O’Callaghan, Robert Poole, David Reynolds, Diane Ryan and Jeff Wright.

Thanks are also extended to South West TAFE for administering the course and

FarmBi\$ for making the course affordable for many farm managers.

Major research initiatives were a feature of the three-year period. The *Countdown Downunder Mastitis Model* and the *Countdown Downunder Mastitis Focus* report were achieved through the programming efforts of Mike Larcombe supported by algorithms and literature reviews by Richard Shephard. Judith Schweitzer from the ADHIS developed the *Cell Check* software. The reflective and honest contributions of the 11 case study farmers and expert analysis by Ruth Nettle provided the project with *Insight to the dairy industry’s capacity to manage mastitis*.

Members of the many working groups used their experience, facilitation skills and expertise to advance technical issues with major contributions from Bill Darmody (Dairy Industry Antibiotic Forum, water quality and teat disinfectants), Graeme Mein (performance testing of milking machines, the mastitis model), Jakob Malmo (*Strep uberis*, clinical cases), Mark Paine (Dairy Industry Antibiotic Forum), John Penry (the mastitis

investigation pack), Erica Schelfhorst (on-farm data capture) and Peter Younis (the mastitis investigation pack, *Strep ag* control).

The Milk Quality Awards were an annual highlight. Our thanks those who helped make them happen – *The Weekly Times* for sponsoring the event, the dairy companies for supporting the initiative, ADHIS for analysing the data, the factory field staff for personalising the process and Helen Pitman for co-ordinating the awards.

Finally, thanks to others in the central team who were the face of Countdown and helped bring good ideas to fruition – Cath Leishman for her office and administrative support and the Regional Project Managers for ensuring project elements were appropriately pitched and relevant to advisers and farmers in their region.

Countdown Downunder was a project in the Change Management and Delivery portfolio of Dairy Australia. We greatly value the support from Dairy Australia and Steve Coats to help advance innovation and change on-farm.

Much of the movement toward best practice mastitis control during the second phase of the project was mediated through the Countdown Downunder Farmer Short Course. The quality of the training, its widespread availability, the enthusiasm it sparked and the outcomes that were achieved are a tribute to the trainers:

Bruce Adams	David Colson	Graham Harrison	John Miller	Jeffery Schrale
Marcus Anstey	David Crawford	Ian Henderson	Bill Morgan	Howard Smith
Simon Beasley	Bill Darmody	Ian Hubble	Alistair Murray	Fiona Smolenaars
Glen Beath	Gerard Davis	Tim Humphris	Dario Nandapi	Sabine Suess
Charlie Blackwood	Tony Dowman	Rod Irwin	Anthony Neal	Bill Tom
Carol Bradshaw	Rod Dyson	Ray Johnston	Joe Nechwatal	Bill Tranter
Ian Bradshaw	Keith Fletcher	Kerry Kempton	John Penry	Peter Wendell-Smith
Dianne Brennan	Peter Grant	Darold Klindworth	Durham Prewett	Roger Went
Dick Buesnel	Alison Gunn	David Lemchens	Bruce Robertson	Michael Wraight
Mark Burgemeister	Gabriel Hakim	Jakob Malmo	Peter Rosher	Anthea Young
David Chaffey	Jim Hancock	Bernie Mason	Duncan Runciman	Peter Younis
Paul Clavin	Ron Harris	Bruce McIntyre	John Ryan	Barry Zimmermann
		Jamie McNeil		

# Countdown Downunder 2001 to 2004 – The Short Report

**In the six years since it was launched, Countdown Downunder's principles and terminology have been incorporated into the language of dairying. Rather than worrying about technical uncertainties or waiting for new technologies, there is wide acceptance that mastitis can be controlled by good management.**

**Awareness of best practice as described in the *Countdown Downunder Farm Guidelines for Mastitis Control* is high and many farmers have significantly changed aspects of their farm management to align with best practice through the Countdown Downunder Farmer Short Course. All farmers benefit from the industry investment in building the capacity of local advisers to support change on farm.**

## Doing the simple things well is a winning strategy

In the two years since they completed the course, Leigh and Kellie Schuurung have dropped their herd's Bulk Milk Cell Count from a season average of 400,000 to well below 100,000 cells/mL.

"The (Countdown Downunder Farmer Short) course had a major impact on the way we run the farm," Leigh says, "it influenced our whole attitude to herd health".

Leigh milks 390 cows in a 30 swing-over shed in Togari in north-west Tasmania. He attributes the change solely to good farming practice, "do the simple things, do them really well, and always be consistent".

At milking there is no shouting in the dairy and the herd is always moved calmly and quietly. Leigh is very careful that cups don't stay on the cows too long and believes teat disinfectant after milking is a must. "You've got to teat spray otherwise it's not worth milking the cows."



***Kellie and Leigh Schuurung (pictured with their children Taya and Tobey) won The Weekly Times Countdown Downunder Milk Quality Award in 2005.***

Changes in the way calving and drying-off are managed have also significantly improved the cell count.

Leigh's vet, Peter Wendell-Smith, keeps an interest in the herd. "If he's here, he goes and checks the ticket."

Leigh and Kellie are happy with the progress made in their herd, "being under 100,000 for most of the season makes a big difference to our profits".

*Story: Megan McNaught, The Weekly Times  
Photograph: Ilsa Cunningham, Circular Head Chronicle*

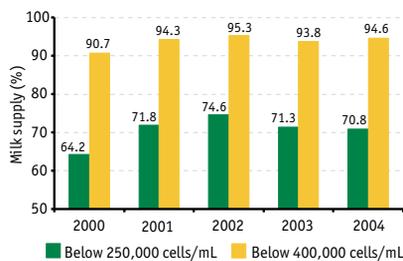
# Progress toward the goals

## Achieving the cell count goals would increase farm profitability by about \$33 million per year

Countdown Downunder goals for 2001-2004:

1. Work toward the industry cell count goals of having all milk supply below 400,000 cells/mL and 90% of supply below 250,000 cells/mL;
2. Lower the number of clinical cases of mastitis in the Australian dairy herd by 20%; and
3. Contribute to an industry-wide plan for sustainable and effective use of antibiotics.

The third goal was achieved in full and the first two were achieved in part.



## Progress toward the national cell count goals

The steady progress towards the cell count goals reversed in 2003 as farm management focused on surviving the ‘one-in-100-year’ drought (see bar chart). Under extreme monetary pressures, farmers reduced their expenditure on products and services integral to mastitis management such as teatcup liners, Dry Cow Treatment or testing milking machine performance. Many significantly reduced herd size and sold heifers to reduce the need to supplementary feed and the subsequent lack of replacement stock has restricted the opportunity for strategic culling. Stock movements increased as cows were sold or ‘parked’ on other farms with concomitant movement of bacteria that cause mastitis. These management decisions were made in difficult circumstances and increased the risk of mastitis spreading. Nevertheless, the ongoing benefit achieved for lowering the national cell count from the 2000 to the 2004 level is estimated to be about \$10 per cow every year.

## Countdown Downunder Farmer Short Course survey herds had a lower BMCC in the drought of 2003

In 2003 milk supply with BMCC below...	Farmer Short Course herds (150)	All herds (10,167)
400,000 cells/mL	97.7%	93.8%
250,000 cells/mL	83.5%	71.3%

A survey of farmers who had participated in the Countdown Downunder Farmer Short Course showed that they had maintained lower cell counts than the national herd during the drought of 2003. These farmers had used their skills and understanding to better manage risks.

The extent of the achievement of the second goal was not able to be reliably measured at a national level. However, a downward trend in the sale of lactating cow treatments (indicating fewer clinical case treatments) in one of the larger dairy regions between 1999 and 2003 was consistent with the cell count results.

Every year the 5% of suppliers across Australia who consistently supply milk with the lowest Bulk Milk Cell Count are honoured in The Weekly Times Countdown Downunder Milk Quality Award. Achievements in these herds were inspirational as many were sizeable dairy farms and some winners had overcome mastitis problems to achieve excellent milk quality. The dairy companies participating in the Milk Quality Awards between 2001 and 2004 were:

**Bega Cheese Co-operative**  
**Bodalla**  
**Bonlac Foods**  
**Burra Foods**  
**Cadbury Schweppes**  
**Challenge Dairy**  
**Dairy Farmers Co-operative**

**Gerringong**  
**Green Valley**  
**Lactos**  
**Murray Goulburn Co-operative**  
**National Foods**  
**Nestle**  
**Norco**  
**Pantalica**

**Parmalat**  
**Pauls**  
**Peters and Brownes**  
**Tatura Milk Industries**  
**United Dairy Power**  
**Warrnambool Cheese and Butter Factory**



**Dairy Australia continued to fund Countdown Downunder to support:**

- **the production of high-quality milk;**
- **sustainable skills and networks of farmers and their advisers; and**
- **industry-wide responses to high priority udder health issues.**

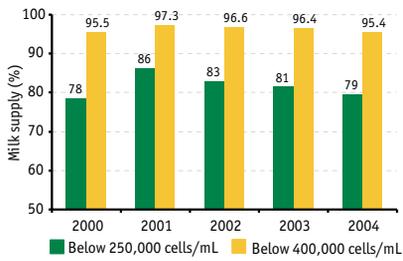
**The resources developed by the project to achieve this are shown below.**

***Countdown Downunder resources for farmers, advisers and industry***

<b>Resource (Fact File)</b>	<b>Output</b>
Countdown Downunder Farm Guidelines for Mastitis Control	11,000 copies of manual describing industry-agreed best practice distributed/sold (RRP \$22).
Countdown Downunder Farmer Short Course	1,804 farmers participated in 89 courses designed to improve the udder health of their herds. Farmers rated 95% of courses as highly satisfactory.
Insights from farmer progress in mastitis control	Factors driving change and adoption of best practice on farms researched and published as <i>Insight to the dairy industry's capacity to manage mastitis</i> .
Countdown Downunder Mastitis Focus	Report designed and software developed to the beta-version to help farmers use milk recording information to better manage mastitis.
Countdown Downunder 'Cups on to cups off'	Training for milk harvesters to minimise spread of infection at milking developed and first pilot of course conducted.
Countdown Downunder Technotes	More than 1,000 copies of the manual detailing the scientific rationale behind the Farm Guidelines sold (RRP \$108.35). New information released as Update Pack (Feb 2003,) as the core material for the 2003 Adviser Conferences.
Relevant and timely messages for the adviser network	Bi-monthly bulletins sent to 1,863 stakeholders to reinforce key messages and provide communication resources to advisers. 393 advisers subscribe to e-mail discussion list, Countdown-L, to exchange thoughts about real cases.
Countdown Downunder 2003 Adviser Conferences	398 advisers attended conferences at 12 regional centres held to strengthen advisory skills and networks.
Countdown Downunder Adviser Short Course	408 advisers across Australia attended 14 courses (5 since June 2001) to develop skills in solving mastitis problems and working in multi-disciplinary teams.
Countdown Downunder Mastitis Investigation Pack	Countdown Downunder Mastitis Investigation Pack developed and available since 2003 to enable a comprehensive, team approach to problem-solving.
Countdown Downunder Certificate for the performance testing of milking machines	Qualification in the performance testing of milking machines available to machine technicians since 2002.
A new approach to managing antibiotics	Consensus reached on the need for an industry-wide plan and an approach recommended to Dairy Australia.
Cell Check	Software and Technote developed and support provided to help dairy companies meet the European Union cell count reporting requirements.
Countdown Downunder Mastitis Model	Model developed to assess long-term impact of changes in mastitis management. Used to assess economic benefits of improving mastitis control.
Milk Quality Award	<i>The Weekly Times</i> featured winners (herds with BMCC in the lowest 5%) from all regions annually since 2001.
National and regional cell count statistics	National cell count statistics (BMCC since 2003) reported annually to the AMAC.

# The regional capacity to manage mastitis

**A competent and responsive network of local advisers enables farmers to access the support they need to strategically manage risk and progressively improve the herd's performance. The bar charts show the progress toward the industry cell count goals in each of the regions.**



## Western Australia

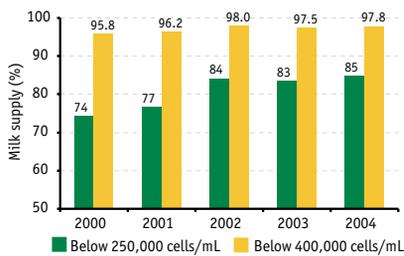
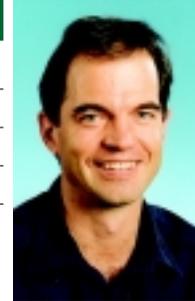
Peter Rosher 08 9751-2311 rosher@cattlevelts.com.au

280 dairy farms: 87 farmers attended 4 Farmer Short Courses

117 advisers: 31 attended the Adviser Short Course or 2003 Conference

Approved trainers: Dario Nandapi, Peter Rosher

Challenges: Industry restructuring and lower farmgate milk prices have reduced focus on farm productivity issues such as mastitis control. Although the number of farms is relatively small there are adequate numbers of service providers with good dairy expertise. The state has a high rate of non-family employed labour (1.3 labour units on average).



## South Australia

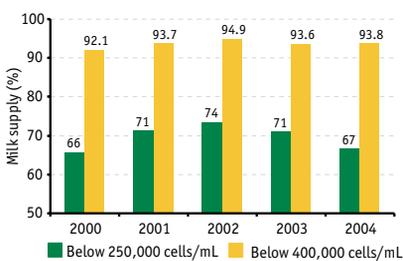
Glen Beath (2001-2002) Kirstie Murphy (2002 onwards) 08 8536-3958, kmurphy@adam.com.au

402 dairy farms: 209 farmers attended 10 Farmer Short Courses

102 advisers: 38 attended Adviser Short Courses or the 2003 conference

Approved trainers: Glen Beath, Alison Gunn, Bernie Mason, Bill Morgan, John Penry

Challenges: Dairying is located in a number of distinct regions across the state. The south east 'growth' region faces limited access to skilled farm workers to milk cows. Very few service providers are dedicated solely to dairying. Demand for milking machine technicians is far greater than supply.



## Western Victoria

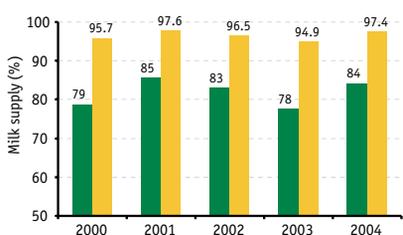
John Penry 03 5593-1077, john@camperdownvet.com.au

1,975 dairy farms: 136 farmers attended 7 Farmer Short Courses

224 advisers: 98 attended Adviser Short Courses or the 2003 conferences

Approved trainers: Charlie Blackwood, David Colson, Jim Hancock, Ian Henderson, Bill Morgan, John Penry, Michael Wraight, Peter Younis

Challenges: Severity of drought varied across the region. Some farms took cows in 'cow parking' arrangements and need to manage the attendant risks to mastitis and milk quality.



## Tasmania

Ian Hubble 03 6434-5424, Ian.Hubble@dpiwe.tas.gov.au

535 dairy farms: 209 farmers attended 10 Farmer Short Courses

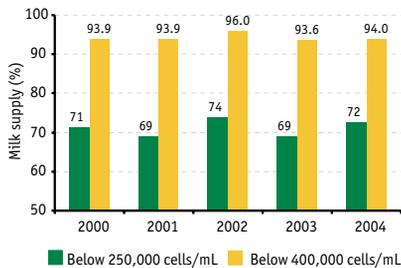
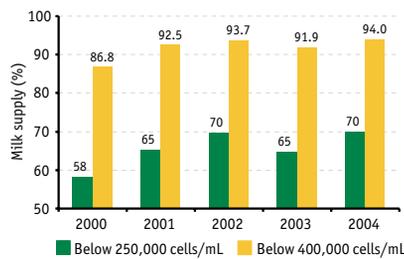
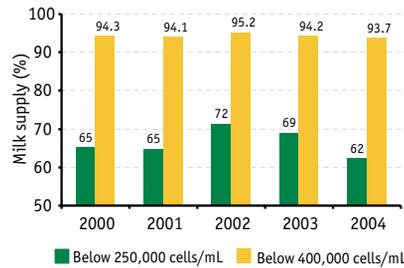
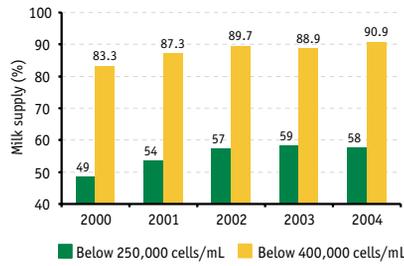
150 advisers: 48 attended the Adviser Short Course or 2003 conference

Approved trainers: Ron Harris, Graham Harrison, Ian Hubble, Peter Wendell-Smith

Challenges: Dairying is only a small proportion of the business for many advisers, but they still have good dairy expertise. Tasmania has larger herd sizes (more than 300 cows compared with the national average of 230) and a high rate of non-family employed labour (1.2 labour units on average).



## THE SHORT REPORT



### Queensland

John Miller 07 4169-9800, john.miller@dpi.qld.gov.au

1,025 dairy farms: 64 farmers attended 3 Farmer Short Courses

197 advisers: 41 attended the Adviser Short Course or 2003 conference

Approved trainers: Marcus Anstey, Ian Bradshaw, Alison Gunn, Joe Nechwatal, John Miller, John Ryan, Howard Smith, Bill Tranter

Challenges: 90% of farmers were adversely affected by the drought. Drought and lower milk prices have reduced focus on farm productivity issues such as mastitis control. Replacement heifers have been sold and heifers now comprise 20% of herds on average. Dairying is located in isolated regions across the state. Very few service providers are dedicated solely to dairying.



### New South Wales

Dick Buesnel (Southern NSW) 02 6492-1733, dick.buesnel@agric.nsw.gov.au and

Anthea Young (Northern NSW) 02 6545-1800, anthea.young@agric.nsw.gov.au

940 dairy farms: 163 farmers attended 8 Farmer Short Courses

260 advisers: 74 attended Adviser Short Courses or 2003 conferences

Approved trainers: Bruce Adams, Dick Buesnel, David Chaffey, David Crawford, Tony Dowman, Ray Johnston, Kerry Kempton, Anthony Neal, Jeffery Schrale, Roger Went, Anthea Young

Challenges: Financial survival was the main focus for many dairy farm businesses with 90% of farmers adversely affected by the drought, high feed prices and low milk prices. Dairying is clustered in pockets along the coast. Dairying is only a small proportion of the business for many service providers.



### Northern Victoria and Riverina

Fiona Smolenaars 03 5823-2835, fiona@sodenterprises.com.au

2,525 dairy farms: 546 farmers attended 28 Farmer Short Courses

319 advisers: 134 attended Adviser Short Courses or 2003 conferences

Approved trainers: Mark Burgemeister, Dianne Brennan, Paul Clavin, Rod Dyson, Keith Fletcher, Peter Grant, Tim Humphris, Bruce McIntyre, Alistair Murray, Durham Prewett, Fiona Smolenaars, Sabine Sues, Bill Tom

Challenges: The focus has been financial survival, with 98% of farmers adversely affected by the drought. Many farmers sent cows to other districts on 'cow parking' arrangements and need to manage the attendant mastitis and milk quality risks. Many cows and heifers were sold. Replacement heifers now average 19% of herds.



### Gippsland

Carol Bradshaw (2001-2003), Barry Zimmermann (2004 onwards) 0418 124 809, bz738182@bigpond.net.au

2,070 dairy farms: 390 farmers attended 19 Farmer Short Courses

285 advisers: 122 attended Adviser Short Courses or 2003 conferences

Approved trainers: Simon Beasley, Carol Bradshaw, Bill Darmody, Gerard Davis, Gabriel Hakim, Rod Irwin, Darold Klindworth, David Lemchens, Jakob Malmo, Jamie McNeil, Bruce Robertson, Duncan Runciman, Barry Zimmermann

Challenges: The severity of the drought varied across the region. Many cows and heifers were sold to reduce feeding requirements (especially in Macalister Irrigation Area), but some farms took cows in 'cow parking' arrangements and need to manage the attendant risks to mastitis and milk quality.



# Building the capacity to manage mastitis on farms



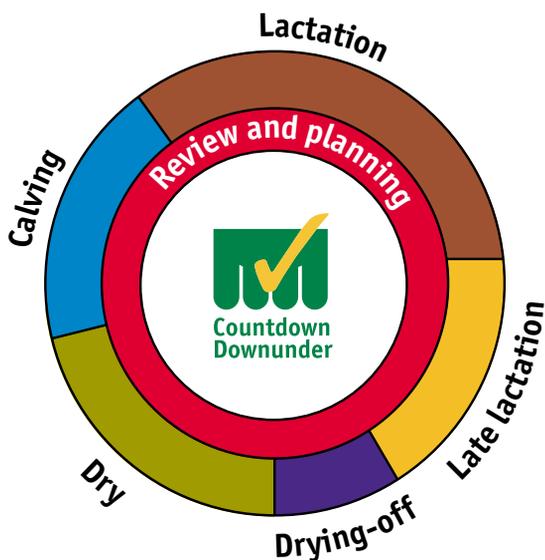
## 1 Recognise the opportunity to improve and be motivated to do it

Research conducted by Countdown found that financial incentives, personal standards, progress toward a discernable endpoint, aversion to risk and awareness of what their peers achieve motivate farmers to improve mastitis control. The milk payment systems used by Australian dairy processing companies and the desire to avoid the frustration and expense of managing clinical mastitis (where each clinical case costs \$169 on average) both provided strong financial incentives for farmers to take action. Modelling by Countdown showed that even herds achieving premium payment could financially benefit from further reducing their annual average Bulk Milk Cell Count (the level of mastitis in the herd) due to increases in milk production and reductions in clinical mastitis and culling.

**Rather than the traditional approach of responding to problems as they arise, strategic management enables farmers to incrementally improve udder health and milk quality in their herds. The way that Countdown Downunder has been building the capacity to manage mastitis on farms is described in terms of elements 1 to 6.**

**1 I recognise the opportunity to improve on my farm and am motivated to do it**

**6 I review and update my plans on a regular basis**



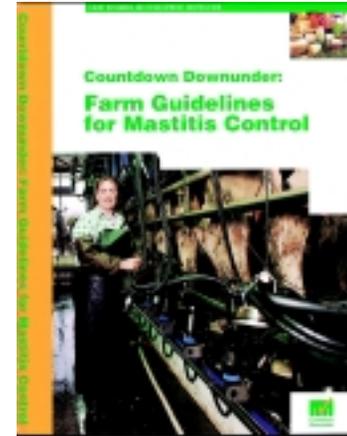
## 6 Review and update plans on a regular basis

Although many farmers are intuitively good at planning what happens from day-to-day, they often do not plan strategically to improve performance over the longer term. The Mastitis Action Plans developed by farmers at the Farmer Short Course provided a clear checklist of what needed to be done and how and when to do it. Course participants sustained changes to products or routines and most (91%) fully or partially achieved their stated goal in the short-term. However as circumstances changed, Bulk Milk Cell Count or clinical case issues started to re-emerge because the planning process itself was not being repeated and there was no way to recognise and respond to the change. Action planning is a formal process to give the best chance of achieving change. To enable farmers to respond effectively to change, the challenge for the industry is to embed planning skills in the marketplace.

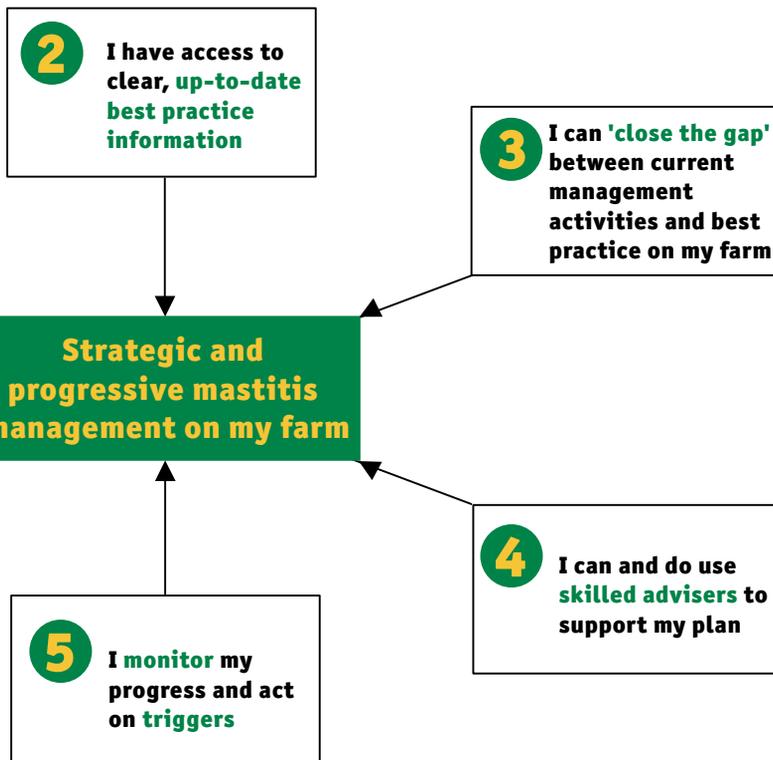
**THE SHORT REPORT**

**2 Have access to clear, up-to-date best practice information**

The *Countdown Downunder Farm Guidelines for Mastitis Control* describe the best practice recommendations for managing mastitis in the Australian dairying industry and continue to be the core project resource. Awareness and understanding of the Farm Guideline recommendations is high. Key messages were reinforced during routine interactions between farmers and advisers, through publications (including *The Australian Dairyfarmer*, advisory newsletters and local media), presentations, training (especially the Farmer Short Course) and mastitis investigations. Recommendations have been kept up-to-date by brokering industry agreement to emerging issues such as teat sealants or how to use water quality test results. Advisers were brought up to speed on the new information through e-mail bulletins, information posted on the website, Technote updates and meetings such as the 2003 Adviser Conferences. This helped farmers receive relevant and timely advice.



*The Countdown Farm Guidelines continue to be cornerstone of the project*



**3 'Close the gap' between current farm management and best practice**

Many farmers have significantly changed aspects of their farm management to align with best practice. The increase in understanding, skills and confidence was especially evident in the 1,804 farmers who have attended the Countdown Downunder Farmer Short Course since its pilot in 2001. The Farmer Short Course helped farmers use their knowledge and experience to develop a practical Mastitis Plan for by 'closing the gap' between what happened on the farm and best practice as described in the Farm Guidelines. A survey conducted in November 2004 found two-thirds of respondents had lowered the BMCC in their herds and were more confident about managing clinical cases of mastitis.

**5 Monitor progress and act on triggers**

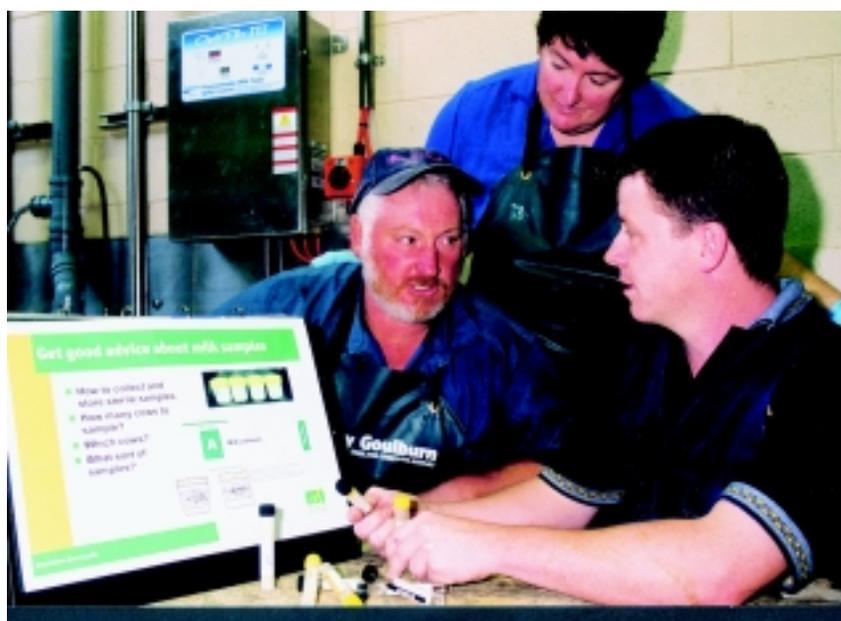
To maintain a focus on performance in a changing and complex operating environment, farmers must be able to routinely assess what is happening in the herd. The Farm Guidelines provide practical measures that alert farmers to changes in the mastitis dynamic in the herd. These triggers for action were the most highly valued element of the Farmer Short Course. Triggers rely on keeping good on-farm records and making the time to analyse them. Release of the Countdown Downunder Mastitis Focus report in 2006 will make this task easier. It will also enable udder health information to be used to make decisions about the herd (and not just individual cows as is the usual practice).

**4 Use skilled advisers to support action plans**

A regional advisory capacity is needed to support farmers in change and respond to local issues. To build the competence and confidence of advisers, Countdown maintained the adviser network (keeping contact details current and sending bi-monthly e-mail bulletins), held regional conferences, provided training opportunities (the Countdown Downunder Adviser Short Course and a new qualification for milking machine technicians) and hosted Countdown-L to enable advisers to discuss real cases. As the advisory population is very dynamic, there is an ongoing need for update meetings and training to maintain active and effective regional networks.

## The next steps 2004-2007

The challenge for Countdown in its third and final phase (2004-2007) is to translate the knowledge and skills of the whole farm team (farmers and advisers) into continuous improvement and risk management on farm. Farmers and their advisers will need to work jointly in active partnerships to prioritise udder health activities and regularly review and build on the outcomes. To help achieve this, Countdown will extend the planning skills of the farm team and develop new tools to help them review progress, make informed decisions at critical times and assess how effort in mastitis control and milk quality fits within their overall farm business.



*“Part of the joy of the course both for presenters and participants and a reason for its success is the sharing of information together with the friendships that arise. The course creates a language and an approach that enables you to jump into a mastitis investigation or milk quality issue quicker and more deeply. However, unless contact is regular, this connection can fade.”*

– Jamie McNeil,  
Countdown Downunder Farmer  
Short Course trainer, Gippsland

**Jamie McNeil (right) with Doug  
and Alison Billing**

Countdown Downunder was funded by Dairy Australia. Regional Project Managers were supported by the state primary industries departments in Queensland, New South Wales and Tasmania, by Murray Dairy in Northern Victoria, WestVic Dairy in Western Victoria and GippsDairy in Gippsland. Peak industry bodies made in-kind contributions through the involvement of their representatives on the Australian Mastitis Advisory Council. The Dairy Herd Improvement Fund co-invested in development of the Countdown Downunder Mastitis Focus report. CSL Pty Ltd was a major sponsor of the Countdown Downunder 2003 Adviser Conferences. The Herald and Weekly Times sponsored the national Milk Quality Awards since 2001.



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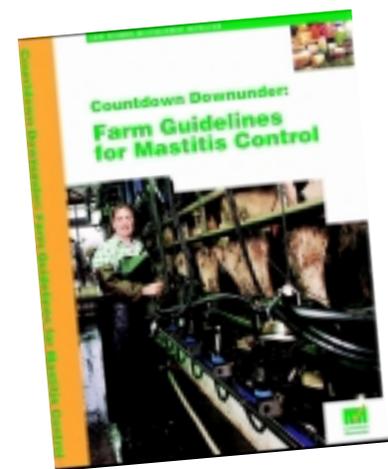
# Setting the scene 2001–2004

Countdown Downunder is the national mastitis and cell count control project improving the profitability, sustainability and competitive advantage of the Australian dairy industry. The project's success is measured in terms of a lower national cell count, reduced rates of clinical mastitis in the national herd and good decision-making around antibiotic use.

From 2001 to 2004, Countdown Downunder's focus has been on building the capacity of farmers, the advisory sector (dairy company field staff, veterinarians, milking machine technicians, pharmaceutical and equipment suppliers, and staff from government departments) and peak industry organisations to manage mastitis on dairy farms. Overall, this has involved developing a good understanding of the principles underpinning mastitis control, increasing their skills and confidence to achieve best practice on farm, and developing resources and services to support change on farms. More specifically, the approach to build capacity has been to:

- have all industry sectors agree on the technical recommendations for mastitis control and establish clear, consistent messages for the Australian dairy industry;
- use the *Countdown Downunder Farm Guidelines for Mastitis Control* (Brightling *et al* 1998) as the cornerstone of the project's communication strategy and training packages;
- have key messages delivered by local advisers, the people that farmers contact in their routine interactions (be it one-to-one or through group activities, publications or presentations);
- build the competence and capacity of service providers so the ability to respond to issues and to support farmers in change is located within the regions;
- promote technology transfer by having the whole farm team (herd managers, employees and advisers) work together systematically toward an agreed outcome;
- promote practical, robust plans to deal with mastitis problems through joint action of multiple disciplines (veterinarians, dairy company staff, milking machine technicians, herd improvement organisations);
- maintain active networks of regional advisers and stakeholders (networks need to be active to be effective);
- provide ways for new information to enter the industry and for new entrants to the industry to be able to readily access existing information and resources;
- by staying independent of commercial interests, enable the project to be used as a vehicle for negotiating change across industry sectors;
- have regular interactions with key decision makers of each sector to ensure resources are a good fit with the marketplace; and
- use a working knowledge of the dairy industry to develop ways to enable effective relations with and between key players in terms of beliefs, actions and evaluation for control of mastitis (see box, p16).

This report describes the progress toward the Countdown goals, explains how the capacity to manage mastitis on Australia's 9,730 dairy farms is being built and gives Fact Files describing the project outputs.



*The Countdown Farm Guidelines are the cornerstone of the project*

### The Australian dairy industry

- Australia produces high-quality milk at a competitive price.
- Australia exports more than half its annual milk production and this market is critical to the industry's continued health and growth.
- The farmgate price is low by world standards so farmers must operate highly cost-efficient production systems.
- Since 2000, Australian dairy farmers have been operating in an industry that is undergoing major restructuring due to deregulation, drought and fluctuations in world markets.
- Although the number of dairy farms continues to decline, the national herd size is relatively stable (about 2.01 million cows).
- Growth of farm businesses depends on milk prices, feed costs, water access and reliable seasons.
- The average herd size (about 230 cows) and production per cow (about 5,300 litres) have increased significantly in the past decade through improved herd genetics, good pasture management and supplementary feeding regimes.
- Milk supply is strongly seasonal in Victoria, South Australia and Tasmania and less so in New South Wales, Queensland and Western Australia.
- Eighty-five per cent dairy farms are owner-operated.
- Six in 10 farms rely solely on family labour.
- 69% of all farm employees are full-time, 19% work part-time and 12% are casual.
- With recent export sales, heifers now make up only 20% of the national herd – a level lower than that required to significantly rebuild herds in the short-term.

### Mastitis control

- In Australia, mastitis is caused by bacteria entering the udder through the teat end.
- The mastitis status of a herd changes continuously depending on the rate of spread in the herd, the rate that infected cows are cured, the culling strategy and the status of cows entering the herd.
- At any one time, a combination of factors can increase the risk of mastitis infections in herds (such as inconsistent milking routines, inadequate management or hygiene at drying-off or calving, suboptimal milking machine performance, damaged teat skin or muddy paddocks).
- There is often a delay between the actions that either promote or damage udder health and their outcomes.
- All operators on the farm, especially those involved in milking, need to have consistent day-to-day management practices and pay attention to the details of the routine to maintain good udder health and milk quality.
- For many vets and milking machine technicians, mastitis control and milk quality is only a part of their business and the scope is reducing in areas such as northern New South Wales, southern Queensland and Western Australia.
- Key messages about maintaining product quality (especially those relating to antibiotics) need to be extended in a way that does not undermine consumer confidence.

*Source: Brightling 2001, Dairy Australia 2004a, Dairy Australia 2005*

# Progress toward the goals

The goals of Countdown Downunder between 2001 and 2004 were to:

- work toward the industry cell count goals of having all milk supply below 400,000 cells/mL and 90% of supply below 250,000 cells/mL;
- lower the number of clinical cases of mastitis in the Australian dairy herd by 20%; and
- contribute to an industry-wide plan for sustainable and effective use of antibiotics.

## Goal – Lowering the industry milk cell count

Udder infections (mastitis) are the primary cause of increased cell counts in milk. Mastitis degrades milk quality and reduces farm profitability, processing efficiency and the dairy industry's ability to compete in global markets.

Low milk cell counts are an international measure of good milk quality. Countdown is working toward the industry-agreed goals of having all milk supply with cell counts below 400,000 cells/mL and 90% of supply below 250,000 cells/mL. The target of 400,000 cells/mL relates to the European Union position on suitability of milk for human consumption (92/46/EEC). As well as helping achieve this, the 250,000 cells/mL target was set to motivate industry to improve farm profitability and processing productivity to a level that is challenging yet attainable. The 250,000 cells/mL target is consistent with the cell count threshold for premium payment made by many dairy processing companies.

*“Without an independent body like Countdown showing the science behind the numbers, farmers would become more sceptical about the cell count acceptance levels.”*

*– Ewin Lewis, Farm Services Officer, Dairy Farmers, New South Wales*

There was no way of assessing the national cell count situation in 1998 when these goals were set. In 1999, Countdown developed a national cell count statistic from milk recording data (involving about half of Australian herds) that was collated at the end of each fiscal year by the Australian Dairy Herd Improvement Scheme. This became known as the Herd Milk Cell Count. On release of the statistic in 1999 it became apparent that the cell count challenge was greater than anticipated, with 91% of Herd Milk Cell Counts below 400,000 cells/mL and only 66% below 250,000 cells/mL. However, the industry remained committed to the goals in the interests of maintaining market access and improving the profitability of dairy farmers and processing companies.

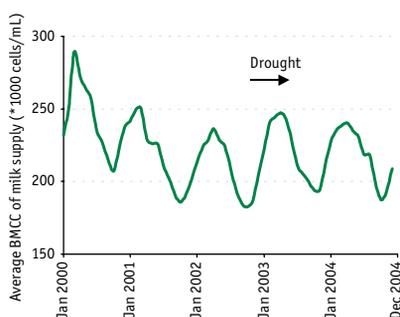
Countdown estimated that the economic benefit on farms of achieving the industry cell count goals through improved mastitis management was about \$33 million per year (Fact File: Countdown Downunder Mastitis Model). This was a conservative estimate as it didn't include the costs associated with the increased culling and replacement of infected cows. It represented an average benefit of \$22 per cow per year.

**Achieving the industry cell count goals would increase farm profitability by about \$33 million per year**



**Bulk Milk Cell Counts are collected daily from most dairy herds in Australia**

**Steady progress towards the industry cell count goals reversed in 2003 as farm management focused on surviving the 'one-in-100-year' drought**



**Figure 1: The downward trend of BMCC in the national milk supply reversed in 2003**

**Table 1: Progress toward the dairy industry cell count goals**

Year	Milk supply with BMCC below 400,000 cells/mL	Milk supply with BMCC below 250,000 cells/mL	Number of farms
Industry goal	100%	90%	
2004	94.6%	70.8%	9,730
2003	93.8%	71.3%	10,167
2002	95.3%	74.6%	10,978
2001	94.3%	71.8%	11,953
2000	90.7%	64.2%	12,242

The opportunity to report Australia’s cell count status using Bulk Milk Cell Counts (BMCC) came with Countdown’s instigation of the national Milk Quality Award. Since 2001, dairy companies have submitted BMCC data from their suppliers to the Australian Dairy Herd Improvement Scheme for analysis at the end of each calendar year (Fact File: Milk Quality Award). Herds are then ranked (to determine those with the lowest 5% BMCC) and national and regional cell counts are calculated. Although the Herd Milk Cell Counts (derived from the 50% of herds participating in milk recording) proved to be consistent with the BMCC statistic, the Australian Mastitis Advisory Council chose to use the BMCC statistic because data were collected frequently (usually daily) from all dairy herds in Australia (Fact File: National and regional cell count statistics).

There had been steady progress towards the industry cell count goals until 2003 when, for the first time since measurement began, this trend reversed (Table 1). A similar trend in clinical case rate was also indicated (Figure 3 p21).

Numerous management factors contributed to the reversal of the cell count trend. In 2003, unprecedented regional issues associated with the ‘one-in-100-year’ drought, high feed costs and low farmgate milk prices forced many farmers to compromise management decisions to survive financially in the short-term. A national survey of dairy farmers as part of the Dairy 2004 Situation and Outlook subsequently found that four in every five farmers had been adversely affected by the drought (Dairy Australia 2004b). Under extreme monetary pressures, farmers reduced their expenditure on products and services integral to mastitis management such as teatcup liners, Dry Cow Treatment or testing milking machine performance. Many significantly reduced herd size and sold heifers to reduce the need for supplementary feed and the subsequent lack of replacement stock has restricted the opportunity for strategic culling. Stock movements increased as cows were sold or ‘parked’ on other farms with concomitant movement of bacteria that cause mastitis. These management decisions were made in difficult circumstances and increased the risk of mastitis spreading.

The effects of management changes on milk quality are often not seen until the next lactation (for example, one of the functions of dry cow antibiotic treatment is to protect against infection at the next calving) so it is not surprising that the 2004 cell counts remained at levels similar to 2003 (Figure 1). Nevertheless, the ongoing benefit achieved for lowering the national cell count from the 2000 to the 2004 level is estimated to be about \$10 per cow every year, based on the Countdown Downunder Mastitis Model.

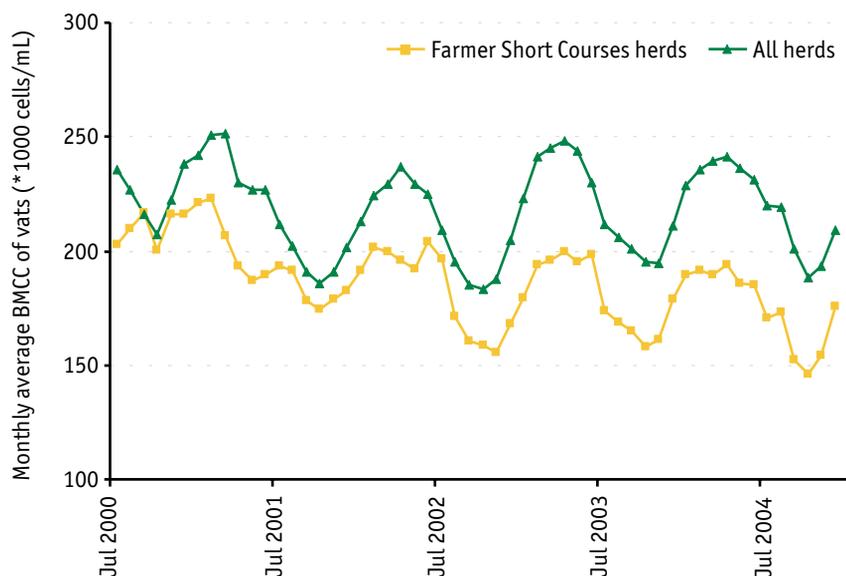
Countdown has been helping industry build the capacity to improve mastitis management on farms. The Countdown Downunder Farmer Short Course, in particular, was designed to improve the mastitis management capacity of farmers and help them develop Mastitis Action Plans tailored to their herd and situation. Post-course surveys found that most of the farmers who had participated in the course were more confident and competent in managing cell counts (Fact File: Countdown Downunder Farmer Short Course).

BMCC data for a subset of (150) course farmers showed that they, in contrast to the national figures, maintained better milk quality in 2003 (Table 2, Figure 2). This was very encouraging as many of these farmers had used Countdown's key messages to better manage risks. Their increased management capacity had helped them maintain milk quality even in adverse circumstances. Without this increased capacity, the cell count of the national herd in 2003 and the flow-on implications for 2004 would have been higher.

**Farmers who participated in the Farmer Short Course maintained lower cell counts than the national herd in the drought of 2003**

**Table 2: Countdown Downunder Farmer Short Course survey herds had a lower BMCC in the drought of 2003**

In 2003 milk supply with BMCC below...	Farmer Short Course survey herds (150)	All herds (10,167)
400,000 cells/mL	97.7%	93.8%
250,000 cells/mL	83.5%	71.3%



**Figure 2: Farmer Short Course survey herds already had a lower cell count than the national herd and the size of the difference increased after the course**

## Goal – Reducing the rate of clinical mastitis



**Clinical cases disrupt the milking routine and reduce farm profitability**

Management of clinical cases of mastitis is a major source of frustration and expense for many Australian dairy farmers. Clinical cases disrupt the milking routine, increase the labour requirement, reduce profitability and introduce a (small but extremely serious) risk of contaminating the vat with antibiotics. Uncertainty about the size of an outbreak can also be very worrying, especially at calving.

Not all herds with clinical case problems have high BMCC (Barkema *et al* 1998). More than half (58%) of the farmers who attended the Countdown Downunder Farmer Short Course went to reduce clinical mastitis in their herds:

*“We always had a lowish bulk milk cell count but had a big problem with [clinical] mastitis in fresh cows.”*

*– Jacqui Biddulph, dairy farmer, Western Australia*

From 2001 to 2004, Countdown Downunder aimed to lower the number of clinical cases in the national herd by 20%. Similar to the cell count situation three years earlier, there was no mechanism in place to assess this goal, so the first step in establishing whether the project had made a difference was to explore ways of measuring and reporting clinical cases at a national level. Three options were examined: by survey, from stock treatment records kept for quality assurance and through the sale of antibiotic tubes for intramammary treatment of lactating cow.

### The short course clinical count

The average clinical case rate calculated by 417 farmers at the Countdown Downunder Farmer Short Course between March 2002 and May 2004 was 3.75 cases per 100 cows per month. Most herds had problems around calving (62%), many during lactation (40%) and some at the end of lactation (17%).

Surveys in 1999 of 4,473 Victorian and Queensland herds yielded a highly variable estimate of the clinical case rate. Figures quoted were often ‘guesstimates’ based on recent experience and clinical case information was overly simplified to the proportion of affected cows in the herd during the year. Calculation of the number of cases per 100 cows per month at calving and during lactation (as recommended in the Farm Guidelines) at the Farmer Short Courses confirmed that survey questions based on recall were likely to be imprecise and uninformative.

Records kept as part of the farm quality assurance programs introduced by most dairy processing companies in 2000 were considered as a source of ‘hard data’ as suppliers are required to record antibiotic treatments of each clinical case. The On-farm Data Capture study of 85 dairy farmers in Victoria provided a more detailed understanding of how this information was collected and used (Fact File: On-farm Data Capture project collaboration ).

Clinical case information was often recorded manually rather than electronically and was not necessarily kept permanently. It was essentially being kept in the short term to identify the withholding period after antibiotic treatment for individual cows and to comply with quality assurance programs, typically:

*[Treatment information ends up] "... at the moment in the exercise book, as part of the QA program, that is what they require. Either that or the spreadsheet... I tend not to utilise information too much."*

– Dairy farmer from the On-farm Data Capture project, Western Victoria

Given the constraints on the accessibility of records and the concurrent development of Countdown Downunder Mastitis Focus (see p22), a decision was made not to spend substantial time and money in manually collecting clinical case information from quality assurance programs across the nation.

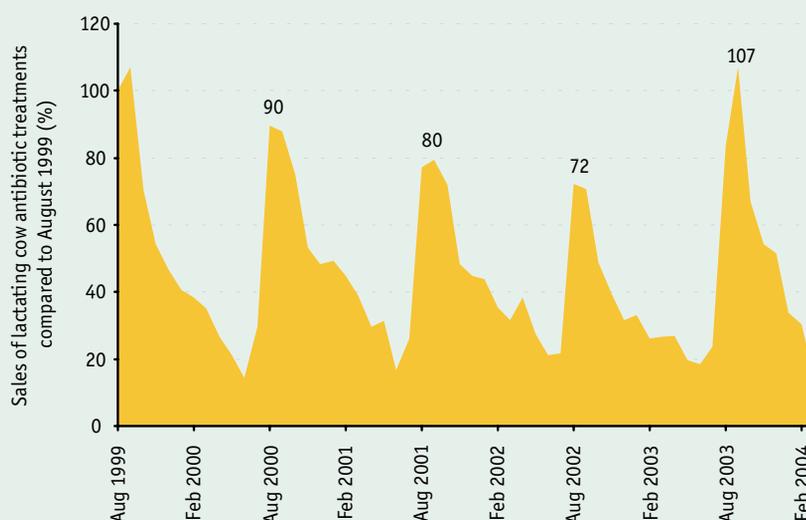
In the interim, the sale of lactating cow intramammary treatments was explored as an indirect measure of the clinical case rate and proved to be a locally useful way of demonstrating progress toward the clinical case goal (Figure 3).

The commercially sensitive nature of sale data for private companies (Jurox Pty Ltd, Schering-Plough Animal Health and Pfizer Animal Health) precluded it from being used to derive a national clinical case statistic.

**Australia is not currently in a position to report its clinical case status**

### Sale of lactating cow intramammary tubes

Northern Victoria has a largely seasonal calving pattern which starts in August. The sale of lactating cow tubes from a large dairy practice in Northern Victoria decreased from 1999 to 2003 (Figure 3). Peak sales in the calving season starting in August 2002 were 28% lower than they had been at the 1999-2000 season and the total number of tubes sold was 25% lower. Mastitis management during the drought resulted in increased numbers of clinical cases at the 2003 calving.



**Figure 3: Sales of lactating cow intramammary tubes in a large dairy practice in Northern Victoria were 25% lower in the calving season starting in August 2002 than they had been in the season starting August 1999**

## Opportunity for a future measure of clinical cases

An accurate, repeatable and useful measure for monitoring clinical case status depends on:

- a clear case definition so the same event is measured at all times;
- comprehensive on-farm records that are permanently stored;
- a way of harvesting the data;
- a way of analysing the data, and
- presentation of the data in a format that is readily understood and informative.

The International Dairy Federation recognises that different measures of calculation can produce widely variable measures of clinical cases and cautions against using the number of cows as the reference population (Smith 1997). It recommends that clinical mastitis is reported as a true rate – that is, the number of cases per unit time at risk. This requires information for each cow on calving date, the date when treatment starts and the date that cows finish their lactation or leave the herd.

Issues associated with these steps have all been confronted during the development of Mastitis Focus.

The one-page Mastitis Focus report has been designed to enable farmers to assess the spread of mastitis in their herds and alert them to potential problems (Fact File: Countdown Downunder Mastitis Focus). Its validity relies on permanent, comprehensive records of mastitis treatments that can be harvested electronically. The challenge is to use the report output to help motivate farmers to do this. The system is due to be completed in June 2006 and it promises to be the logical way of deriving a national clinical case measure.

**Widespread adoption of Mastitis Focus over the next three years could provide a mechanism for compiling a national measure of clinical cases**

## Goal – Industry planning for sustainable and effective use of antibiotics

The Australian dairy industry uses antibiotics responsibly and has an excellent track record for producing high-quality, residue-free produce (Animal Health Australia 2004). To maintain and increase export markets and manufacturing profitability, the industry needs to satisfy both itself and its customers that antibiotic use is well-managed throughout the supply chain. One of Countdown's goals was to contribute an udder health perspective to industry-wide planning for sustainable and effective use of antibiotics.

This was achieved through a Dairy Industry Antibiotic Forum hosted by Countdown in 2001 (Fact File: A new approach to managing antibiotics). Representatives from all industry sectors – including farmers, dairy companies, pharmaceutical companies and regulators – endorsed the need for an industry-wide plan to achieve effective, sustainable use of antibiotics and to meet community and customer requirements. Participants were invited to voice any issues relating to antibiotics that were of concern to their organisation and this information was analysed by a working group.

The full recommendations were submitted in a report to the Australian Dairy Industry Council (Brightling *et al* 2001). Managing production and demonstrating that produce is free of antibiotic costs the dairy industry at least \$17 million a year (with \$9 million spent on monitoring and reporting for antibiotic residues and \$8.5 million lost in reduced cheese productivity).

The analysis showed that many of the concerns raised by stakeholders related to good decision-making on farms and that the industry needed a system of decision-making that was more flexible and able to respond to various manufacturing and customer requirements. A framework that supports such a system could be constructed by the industry pooling its knowledge and expertise to develop clear, scientifically supported guidelines for organisations to use when they formulate antibiotic policy and respond to antibiotic-related issues. The design of such an information framework requires dedicated resources and funding.

Since its formation in 2002, Dairy Australia has taken responsibility for industry-wide co-ordination of issues such as management of antibiotics. The 2004 declaration of the European Union Directive (EC Animal By-products Regulation 1774/2002) – that milk containing antibiotics must not enter the human or animal food chains – provides an additional driver for having an Australian antibiotic management plan to meet customer requirements.



*The cost of managing antibiotic use in the dairy industry was conservatively estimated at \$17 million a year*

**Decisions about antibiotic use on farm would be more responsive to manufacturing and customer requirements if clear guidelines were jointly developed and adopted by industry**

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# Building the capacity to manage mastitis on farms

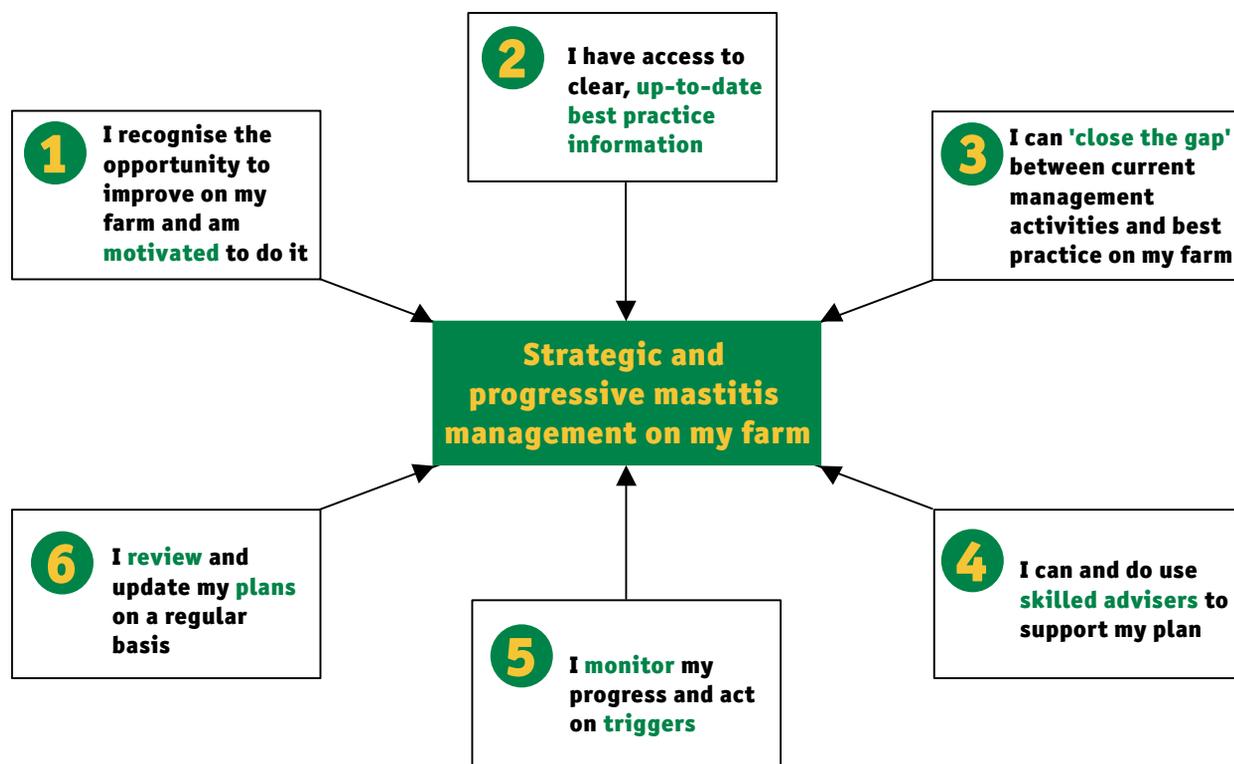
In the six years since it was launched, Countdown has changed the nature of mastitis control in Australia. Its principles and terminology have been incorporated into the language of dairying. Ideas that were new or controversial five years ago are now accepted as basic tenets and, rather than worrying about technical uncertainties or waiting for new technologies, there is general acceptance that mastitis can be controlled by good management. There are regional networks of advisers who have a special interest in solving mastitis problems and related milk quality problems. Awareness of best practice as described in the Farm Guidelines is high and many farmers have significantly changed aspects of their farm management to align with best practice.

The increase in understanding, skills and confidence was especially evident in the 1,804 farmers who attended the Countdown Downunder Farmer Short Course. In a survey in November 2004, 66% of participants had lowered the BMCC in their herds after the course, people were more confident about managing mastitis and 91% had achieved some or all of the goals of their Mastitis Action Plan (Fact File: Countdown Downunder Farmer Short Course).

Countdown initiated a separate research effort to better understand why these changes had happened – the *Insight to the dairy industry's capacity to manage mastitis* report (Fact File: Insights from farmer progress in mastitis control). Eleven farmers from south-eastern Australia (New South Wales, Victoria and South Australia) participated in a qualitative evaluation to gain a better understanding of how and why decisions were being made around mastitis control and milk quality.

**An innovative series of case studies over 18 months explored how and why decisions about mastitis and milk quality were made on farms**

The case study farmers were interviewed on multiple occasions (up to five times) over 18 months to determine what influenced change on the farm and to identify ways of further improving management capacity. This research showed that farmers attending the course made sustainable changes in products, practices and routines consistent with Farm Guideline recommendations. However, their Mastitis Action Plans were designed to service specific needs faced by the farmers in 2002 and needed to be reviewed to maintain relevance as circumstances and udder health issues changed (Nettle *et al* 2005).



To continue to make strategic and progressive changes to mastitis and milk quality on farm (Figure 4), farmers must be able to:

- recognise the opportunity to improve and be motivated to do it;
- have access to clear, up-to-date best practice information;
- ‘close the gap’ between current farm management and best practice;
- use skilled advisers to support action plans;
- monitor progress and act on triggers; and
- review and update plans regularly.

*Figure 4: Elements of strategic and progressive mastitis management*

The way that Countdown has been building the capacity to manage mastitis and milk quality on farms between 2001 and 2004 is described in terms of elements 1 to 6 in the following pages.

## 1 Recognise the opportunity to improve and be motivated to do it



*Milk payment systems used by dairy companies provide a major incentive for farmers to improve milk quality*

The drivers to take action to improve mastitis control and milk quality are many and varied.

Australian dairy processing companies use premium milk payment systems to specify the desired cell count and quality of their raw milk supply. Milk pricing signals provide a major incentive for farmers to improve mastitis control. It was the wish to ‘stay in premium’ that motivated many to attend the Countdown Downunder Farmer Short Course.

*“... and there’s a fair few dollars so we can stay in Band 1 for most of the year ... could be worth ... \$50-60 thousand for us.”*

*– ‘Ryan’, a case study farmer, Gippsland*

By 2004, six out of 10 dairy farmers had an annual BMCC average at or below 250,000 cells/mL and would have achieved premium payments for most of the year. One-quarter (26%) of farmers had an annual average within 50,000 cells/mL of the threshold at which their dairy company paid a premium and were therefore at constant risk of losing that premium. The four in 10 farmers whose annual average was above 250,000 cells/mL could have immediately received more money for their milk for much of the year by achieving a better payment band.

However, the milk pricing signal didn’t always act as an incentive. The pressure to lower the cell count became a burden for some case study farmers because it was beyond the management capacity of their farm system. Others used the cell count threshold for premium payment as an accepted standard despite having the capacity to achieve better performance and reduce risk.

Most farms could improve farm profitability by reducing the level of infection and therefore the annual average BMCC in their herds (Table 3). In addition to the performance rewards available through the milk payment systems, lowering the level of mastitis increases milk production and reduces clinical mastitis and cows culled for mastitis. These benefits were less obvious (and less motivational) to farmers than ‘cash in hand’ from better milk payments.

**Even farms achieving premium milk payment could financially benefit from lowering their annual average BMCC**

**Table 3: The average net benefit per cow per year of lowering the farm’s annual average BMCC based on the Countdown Downunder Mastitis Model\***

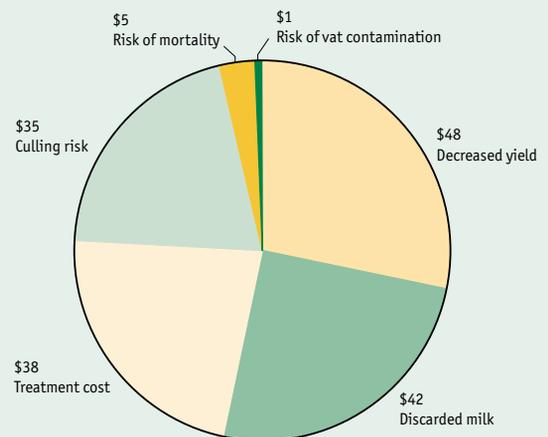
Annual average BMCC of herd	Moving to the bracket below	Moving to the 0-100 bracket
0-100 cells/mL	\$0	\$0
101-200 cells/mL	\$24	\$24
201-300 cells/mL	\$47	\$71
301-400 cells/mL	\$55	\$126
401-500 cells/mL	\$118	\$244
501-600 cells/mL	\$180	\$424
601-700 cells/mL	\$147	\$571
701-800 cells/mL	\$147	\$718

\* The model was developed by Larcombe and Shephard 2004. As these figures represent the average net benefit, the value realised on a particular farm may be greater or lesser than that shown.

### Cost of a clinical case (June 2004)

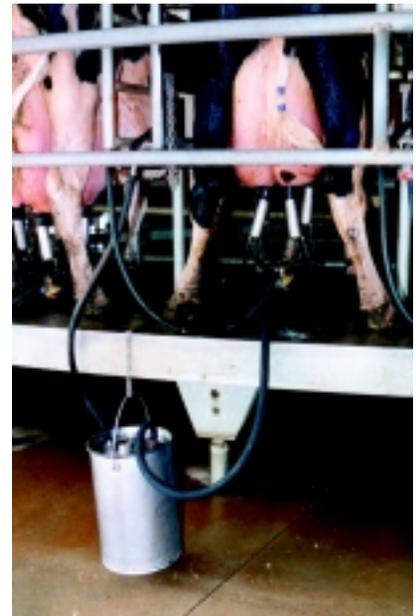
Cost of treatment	\$
– Intramammary antibiotics (3 tubes)	= 11
– Injectable antibiotics (\$20 for 1 in 10 cases)	= 2
– Vet visit (\$100 for 1 in 20 cases)	= 5
– Extra time in the shed (5 mins/milking for 12 milkings @ \$20/hr)	= 20
<hr/>	
Discarded milk	
– 7 days at 24 L/day and 25 cents/L	= 42
<hr/>	
Decreased yield for remainder of lactation	
– For cases in early lactation (calving to 30 days) estimated 3.4% reduction in 300 day yield of 5,500 litres is 190 L @ 25 cents/L	= 48
<hr/>	
Risk of mortality	
– 1 in 200 cases, cow value \$1,000	= 5
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Risk of culling	
– 7 in 100 cases, replacement cost \$500	= 35
<hr/>	
Risk of vat contamination	
– 2,000 litres in 1,000 cases	= 1
<hr/>	
<b>Total</b>	<b>= \$169</b>

*The average cost of a clinical case will be substantially higher in high producing herds due to the higher loss of production for the lactation.*



**Figure 5: The average cost of a clinical case is \$169**

Reducing the cost and frustration of treating clinical cases was also a great motivator for action. On average, a case of clinical mastitis costs \$169 (Figure 5). This provided the impetus for action for one of the case study farmers who estimated that clinical cases at calving had costed them about \$13,000. In fact, more than half of the farmers who attended the Countdown Downunder Farmer Short Course went because they wanted to reduce clinical mastitis in their herds.



**More than half the farmers attending Farmer Short Courses wanted to reduce the frustration associated with clinical mastitis**



**Kellie and Leigh Schuurung won a Milk Quality Award in 2005.**

*Photograph: Ilsa Cunningham,  
Circular Head Chronicle*

As well as economic benefits, insights from case study farms have shown that progress toward a discernable end point, personal aspirations, achievements of peers and aversion to risk or inconvenience can be motivational (Nettle *et al* 2005).

Farmers were often motivated by an awareness of what their peers were achieving in a comparable situation or de-motivated when they felt there was a low chance of success. Progress toward an outcome (such as lowering BMCC) was needed to reinforce change in behaviour and motivate ongoing effort. The annual Milk Quality Award, which celebrates the success of dairy farmers who consistently supply milk with low BMCC through feature articles in *The Weekly Times*, was a very public demonstration that attention to detail in multiple areas could achieve results and enabled these positive experiences to be shared nationally (Fact File: Milk Quality Awards).

*“Our cell count has dropped from 400 [,000] to well under 100 [,000 cells/mL] in three years. We did the Countdown Downunder course a couple of years ago and made a few changes to our farming practices as soon as we got back to the farm. It influenced our whole attitude to herd health.”*

*– Leigh Schuurung, dairy farmer, Tasmania*

Recognising opportunities to improve is as necessary for progress as being motivated to take action. The traditional approach to mastitis control has been to respond to problems as they arise. Yet most herds would benefit from management strategies to reduce the risk of having problems and incrementally improve their herd performance.

For farmers to be convinced of the value of changing from their current management, they need to have a good understanding of where investment in mastitis control fits within the overall farm business. Industry-wide programs such as Taking Stock (part of the Dairy Moving Forward initiative) provide an opportunity for farming families to review the physical, financial and human elements of their businesses at a one-to-one meeting with an adviser. Countdown has contributed to the Taking Stock training and resources so that advisers can alert farmers when mastitis and milk quality are causing a major loss to their farm business (by highlighting the effects to farms with annual average BMCC above 400,000 cells/mL). As herds with chronically high cell counts usually have a mastitis problem, the needs of these farms are initially for problem-solving investigations rather than strategic management review.

The next phase of Countdown is particularly focused on helping service providers offer their farmer clients services which have:

- appropriate business (value) propositions around on-farm planning;
- anticipate and organise resources required to make critical decisions; and
- links performance reviews with this planning procedure.

Knowing what needs are being met for their farm situation, the benefits and costs of taking action and the risks explicitly stated provide a strong platform for good decision-making. The desired outcomes are usually a reduction in bulk milk cell counts or clinical case rates. Outcomes that are equally valid but more difficult to measure include reducing the risk of infection spreading, reducing uncertainty, increasing workplace enjoyment or retaining employees.

## 2 Have access to clear, up-to-date best practice information

Providing clear, consistent messages to the industry on best practice mastitis management was fundamental to advancing udder health. The Farm Guidelines continued to be the cornerstone of the project's communication strategy and the core resource of the Farmer Short Course:

*"Your guidelines were most useful in proving to trainees that our attitudes and methods have come from well researched data (they weren't just our ideas) and it helped fill in the gaps that they didn't understand"*

– Sally Undery, dairy farmer, Queensland

All 11,000 copies that were published have been distributed (most sold at the recommended retail price of \$22) and the manual will be revised and reprinted in the next two years.

A premise of the project is that moments for adoption occur when farmers recognise they have an issue that needs to be acted upon and believe their advisers are capable of giving suitable responses (Brightling 2001). During the second phase of the project, delivery of key messages and development of a better understanding of Farm Guideline recommendations through local advisers (during routine interactions, investigation of mastitis problems or through group activities, publications or presentations) provided multiple opportunities for delivery and reinforcement of the messages and a mechanism for making timely and relevant changes to work practices on dairy farms.

The bimonthly themes introduced as part of the communication strategy in 2000 were continued. Key messages of each theme were broadcast to stakeholders through articles in the *Australian Dairyfarmer*, an e-mail bulletin to more than 1,800 advisers and topically related news articles ('grabs') were posted on the website ([www.countdown.org.au](http://www.countdown.org.au)) for use by dairy companies, herd improvement organisations and veterinary practices in their newsletters. Awareness of the Farm Guideline recommendations was raised at events such as the annual Australian Dairy Conference and field days.

As new research and products became available during the course of the project, the industry needed to develop key messages and resources that were a good fit with the marketplace, were owned and understood by the key players and provided farmers with practical and relevant responses to emerging issues. This involved reviewing the science behind new technologies, obtaining 'hard data' (from key informants, field experience and surveys), negotiating technical messages with stakeholders and incorporating the new information into the existing body of knowledge. Detailed examples of the nature of Countdown's response to emerging issues are given for teat disinfectants, teat sealants and *Strep ag* (see next page).

**The recommendations in the *Countdown Downunder Farm Guidelines for Mastitis Control* are the cornerstone of all project activities**

**Farmers are most likely to adopt best practice recommendations after interacting with their advisers**

## Teat disinfectants: using risk management to improve performance

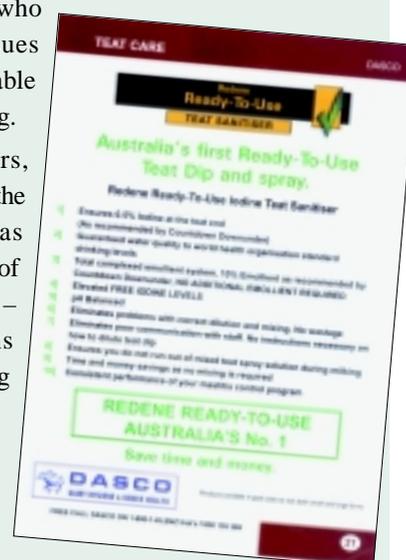
Teat disinfection after milking is a routine practice on many farms. Prior to Countdown, the general attitude was that if teats had been dipped or sprayed the 'job was right'. Few people understood how teat disinfectants worked or what conditions reduced their ability to kill bacteria.

Testing of teat disinfectant mixes and water samples at 14 Countdown Downunder Farmer Short Courses held before March 2002 found a wide range in the quality of the water used in the mix and the level of active ingredient in the final mix (Table 4). As a result, these issues became a priority and Countdown played a pivotal role in increasing awareness and understanding of the importance of good teat disinfection and how to achieve it.

As a first step, Countdown convened a working group with representatives from chemical companies, Australian Pesticides & Veterinary Medicines Authority, laboratories and vets to broker agreement on how to best use teat disinfectant mixes and interpret on-farm and laboratory water quality tests. This information was released in a (revised) Technote, with a worked example of how to add emollient to maintain active ingredient at the correct concentration in the final mix, factors to consider when selecting and reviewing teat disinfectants and clear direction for reporting adverse experiences or unregistered products. The new information was incorporated into sessions in the Farmer Short Course, the Adviser Short Course and the 2003 Adviser Conferences emphasising the key principles and the role that everyone on farm had in ensuring the job was done right.

When supported by a farm protocol that helped avoid future problems, the effect on BMCC was often rapid and reinforced the value of doing things right. Simple ways of testing the quality of the mix (using test kits) and adequate coverage (such as the paper towel test) provided immediate feedback on a farm's system. Teat disinfectant sales increased suggesting that teat disinfection was being used more extensively as well as more effectively. There was also an immediate market for the Ready To Use (RTU) products when they came onto the market in 2000 as they provided an option for farmers who wanted to avoid issues associated with variable water quality or mixing.

For many farmers, increased scrutiny of the whole process has instilled the concept of risk management – preventing problems rather than responding to them.



**Commercial companies are giving their customers clear, consistent messages (advert in Daviesway 2005 rural catalogue)**

**Table 4: Results of testing iodophor teat disinfectant mixes at early Farmer Short Courses\***

Region	No. of iodophor mixes	Those with inadequate iodine**	Comments on water used in the mix
Gippsland	41	72%	Water sources used were rain 29%, dam or river 21%, channel 20%, bore 15% and town 15%. Water in some bore, channel and river samples was hard (>200 ppm). One in 10 contained visible organic matter.
New South Wales	15	62%	Water sources used were channel 35%, rain 29%, creek 18%, bore 12% and town 6%. Water in some bore samples was hard (>200 ppm).
Northern Victoria	69	55%	Water sources used were channel 45%, rain 30%, bore 16% and town 9%. Water in some bore samples was alkaline (>500 ppm). Water in some bore and channel samples was hard (>200 ppm). One in ten mixes were discoloured or had 'floaties'.
Far North Qld	11	27%	Not described.
South Australia	20	80%	Water sources used were town 32%, bore 32%, rain 21%, dam and river 15%. Water in some bore samples and one town water sample was hard (>200 ppm).
Western Australia	12	83%	Water sources used were bore 75%, rain 16% and dam 1%.
Total	168	63%	

\* Participants at these courses also used teat disinfectants containing the active ingredients chlorhexidine or alkylbenzene sulphonic acid

\*\* Containing less than 0.5% iodine

## Teat sealants: supporting new technology by science and process

Teat sealants provide a non-antibiotic way of protecting uninfected cows from environmental mastitis bacteria during the dry period. They are inert compounds that physically prevent bacteria from entering the udder through the teat end. With the commercial release of teat sealants in Australia at the end of 2002, it became a high priority for industry to understand the role and the practicalities of using teat sealants in Australian dairy herds.

To ensure the new technology was supported by science and process, Countdown brokered industry-agreed, scientifically-based recommendations for using teat sealants that aligned with the *Countdown Downunder Farm Guidelines for Mastitis Control* and identified gaps where further information or research would be beneficial.

Consequently, the product manufacturer modified its technical guide so that the cell count threshold for treatment was consistent with the threshold used to make dry cow strategy decisions in Australia (250,000 cells/mL rather than 150,000 cells/mL). Fact Sheet C of the Farm Guidelines was then revised to give farmers a clear guide for choosing an appropriate dry cow strategy for their herds and the

supporting science was explained in an updated version of the 'Teat sealant' Technote FAQ Sheet. Information was passed on to advisers at the 2003 Adviser Conferences and to every dairy farmer in a drying-off lift-out in the May 2003 issue of the *Australian Dairyfarmer* magazine.

The key messages are now widely understood by dairy vets – that teat sealants should only be used in uninfected cows (usually identified by milk recording) and that hygiene during administration is a critical element of this non-antibiotic Dry Cow Treatment. Although most herds are not currently using teat sealants in their dry cow strategy, individual veterinarians are comfortable in recommending them in appropriate herds.

Dairy companies continue to be interested in the concept of teat sealants because of their potential to reduce antibiotic use and therefore the risk of antibiotic residues in milk. Confidence in using the technology would increase with research that determines practical issues associated with successful use of teat sealants in Australian dairying systems and ways of assessing the cost benefit of dry cow strategy options in individual herds.

## Strep agalactiae: pre-emptive extension to minimise spread

Despite most developed countries regarding *Strep ag* as an historical problem, the bacteria is a significant cause of mastitis and milk quality problems and is not uncommon in Australian herds.

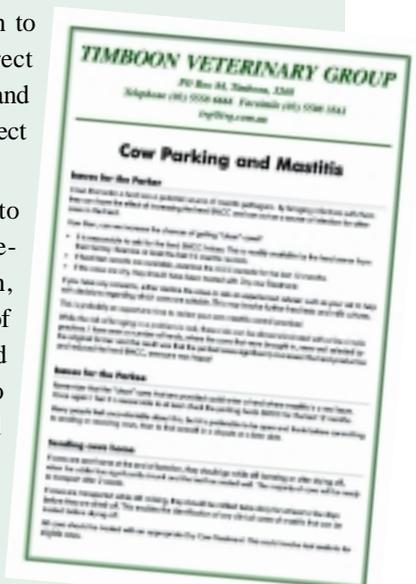
*Strep ag* lives in the udder and is highly contagious. Infection spreads rapidly in herds when the milking hygiene, milking routines or milking machine performance are less than optimal. In 2002, Countdown invested in *Strep ag* control to raise awareness of the need to maintain good management practices to stop the spread of the bacteria and to prevent its introduction to herds. This was especially important given the stock movements and cow parking arrangements that were starting to occur as a result of the drought.

A working group with knowledge and field experience in *Strep ag* control was formed to distil key messages for dealing with the bacteria. These were published as a Technote FAQ Sheet on *Strep ag* in February 2003 and the risks of relaxing key management measures (such as teat disinfection and Dry Cow Treatment) were presented using the Countdown Downunder Mastitis Model at the 2003 Adviser Conferences.

The presence of any *Strep ag* in a herd is now readily used as a trigger for action for both dairy farmers and advisers. In the past, blitz antibiotic treatment was used to cure infections at drying-off but it was not always supported by the

management practices needed to prevent reinfection in the new lactation. Vets now recognise the need to develop a rigorous management plan to eradicate *Strep ag* from an affected herd and regard the Technotes as a valuable resource for this task. Advice on risk management, especially associated with stock movement, was passed on to dairy farmers during direct interaction with advisers and local news articles and direct mailings.

Although it is difficult to assess the return on pre-emptive extension, awareness of the impact of *Strep ag* in herds has resulted in proactive advice to prevent its spread and helped advisers formulate eradication strategies in affected herds.



**A guide for farmers on managing the risks of cow parking produced by Timboon Veterinary Group**

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**There is an ongoing need to incorporate new technical messages into the industry-agreed body of knowledge**

New industry-agreed messages relating to four Farm Guidelines and four emerging issues were widely released as Technotes. The *Countdown Downunder Technotes for Mastitis Control* (Brightling *et al* 2003a) provided the scientific rationale for each of the Farm Guideline recommendations and described the robustness of the recommendation in the Australian dairy industry (Brightling 2001). The new and revised Technotes were published in a shrink-wrapped pack in 2003 (Fact File: Countdown Downunder Technote Update Pack February 2003) and, as well as being available for purchase, became the core resource for the 398 advisers attending the 2003 Adviser Conferences (Fact File: Countdown Downunder 2003 Adviser Conferences).

Countdown has stayed independent of commercial interests relating to mastitis or milk quality to provide industry with high quality technical information that is free of commercial bias and to maintain a way of negotiating change between industry sectors.

### 3 'Close the gap' between current farm management and best practice

Farmers need to manage multiple factors to maintain udder health and milk quality. Their capacity to manage this complexity and to make best use of the available technologies depends on their understanding of the principles of mastitis control, their skills and confidence, their ability to recognise and act on opportunities and timely and relevant support from their farm advisers (Nettle *et al* 2005).

Countdown's premise is that there are two windows of opportunity to motivate adoption of best practice on farms. One is through direct interactions between farmers and their advisers and the other is through training to improve management planning in mastitis and milk quality (Brightling 2001). The end of the first stage of Countdown culminated in design and pilot of the Countdown Downunder Farmer Short Course, which is described in detail in the 2001 report. Countdown has supported the rollout of the course to 1,804 farmers across Australia (involving 37,884 hours of adult education) (Table 5). Attendance of a course over six days demonstrated the enthusiasm and commitment of the farmers involved.

*“Excellent course – I gained far more than I anticipated. It was hard to manage attendance two days a week over three weeks but worth the effort. Definitely lowered the cell count and reduced mastitis cases ...”*

*– Fiona Hawkey, dairy farmer, Northern Victoria*

**Table 5: More than 1,800 farmers have done the Countdown Downunder Farmer Short Course**

Region	Number of courses	Number of farmers
Gippsland	19	390
New South Wales	8	163
Northern Victoria	28	546
Queensland	3	64
South Australia	10	209
Tasmania	10	209
Western Australia	4	87
Western Victoria	7	136
Total	89	1,804

**More than 1,800 dairy farmers have developed a practical Mastitis Action Plan for their farm**

The course encouraged changes in management toward best practice and helped farmers use their own knowledge and experience to develop a practical Mastitis Action Plan to improve performance on farms (Fact File: Countdown Downunder Farmer Short Course). It offered a wealth of information about managing mastitis and a framework for using and integrating service from dairy advisers. It also encouraged farmers to build a team approach to issues on their farms and to be comfortable about seeking advice from professionals. During the sessions, open discussion of ideas and issues around mastitis control was regarded as a very useful part of the course by most participants.

**Figure 6: Farmers used cue cards to help 'close the gap' between current management and best practice**



To encourage change on farm, a challenge was created to 'close the gap' between current practice and best practice as recommended by the Farm Guidelines. Farmers were asked to identify 'What I currently do on my farm' and compare that with 'What is best practice'. The final step was to determine what actions to take to 'close the gap' (Figure 6). This proved to be a powerful and efficient technique that allowed farmers to 'tick off' on elements they already did well and 'fast track' to the things they needed to discuss in detail to improve the situation on their farms. People became more confident in using the resources available to them and actively contributed to improving herd performance within their sphere of technical and managerial responsibilities on the farm. It also enabled them to structure their Mastitis Action Plan in terms of their own risk management approach.

All insight case study farmers improved aspects of their herds' udder health management after the course by making changes to products and practices specified on their plans. Most (91%) had either fully (40%) or partially (51%) achieved their course goals.

**Mastitis Action Plans were tailored to the farmer's goals and approach to risk management**



**Table 6: The BMCC average of the survey herds was lower in the 12 months following the course**

In the 12 months	Average BMCC (data available for 140 herds)
... before the course	225 cells/mL
... after the course	198 cells/mL
Significantly different	Yes (paired t-test)

Participants surveyed in November 2004, up to four years after they had attended the course, had remained very positive about the experience (Fact File: Countdown Downunder Farmer Short Course). People were more confident in managing cell counts and clinical cases (especially employees who worked part-time) and 66% had lowered their BMCC after the course. In fact, the average BMCC of herds was significantly lower in the 12 months following the course (Table 6).

*“Completing the six-day Countdown Downunder Course is one of the best investments farmers could make. It’s absolutely fantastic.”*

– Max Hubner, dairy farmer, Queensland

*“Countdown Downunder would be the most practical course I have attended. More importantly – it earns me money!”*

– John Smith, dairy farmer, New South Wales

*“Best course I’ve ever done. Since doing the course I’ve been top 5% two years running. Even made top 1% this year. Many thanks to all involved in getting this information to us!”*

– Neil Kowald, dairy farmer, South Australia

The methodology and technical messages in the course and its practical outcomes were embraced by trainers with equal enthusiasm:

*“I’ve never seen or heard anything like this program in my 30 years of working in animal health.”*

– Ron Harris, veterinarian, Tasmania, in an interview with Vetlife, September 2004

The post-course surveys described the size and type of changes that occurred in herds following the Farmer Short Course. The insights into farm management showed that a sound understanding of the principles of mastitis control, tools (such as the Farm Guidelines and Mastitis Action Plan) and processes (use of triggers) helped support sustained changes in practice, especially those involved with a change in a product or routine. However, changes in planning and acting around risk management were harder to achieve.

A ‘closing the gap’ process is now being incorporated into a training package for milk harvesters – the Countdown Downunder ‘Cups on to cups off’ course (Fact File: Countdown Downunder ‘Cups on to cups off’ course).



**Max Hubner was a winner of the Milk Quality Award in 2004 and 2005**

Photograph: Barbara Lynch, Tablelands Advertiser



**Dr Ron Harris is a Farmer Short Course trainer and believes the course’s approach is innovative and effective**

Photograph: Vetlife, September 2004

## 4 Use skilled advisers to support action plans

**Building the competence and capacity of local advisers ensures that the ability to support farmers in change is located within the regions**

Much of Countdown Downunder's success to date is a result of improved regional capacity so that dairy farmers have local support to draw upon. To build the competence and confidence of advisers, Countdown maintained the adviser network, hosted regional conferences and provided ongoing training opportunities through the Countdown Downunder Adviser Short Course and a new qualification for milking machine technicians. The Regional Project Managers have made these activities possible – raising the profile of the project within the regions, organising timely regional meetings, helping keep project products and messages appropriately pitched and relevant to the region, and ensuring the project has an up-to-date contact list for communication of key messages and activities to advisers.

Active advisory networks are central to regional capacity. Significant investment (time and money) was spent supporting regional events, meeting with stakeholder groups and maintaining a centrally located communication capacity (Fact File: Relevant and timely messages for the adviser network). This involved keeping contact details current, sending bimonthly e-mail bulletins and hosting the Countdown-L discussion list used by 455 advisers to exchange thoughts and ideas about real cases.

**Professional interaction at courses and conferences was a boon for many advisers struggling with repercussions of the drought**

A one-day Countdown Downunder Adviser Conference was held in all dairying regions in 2003 (Fact File: Countdown Downunder 2003 Adviser Conferences). The conferences enabled people in the regional networks to meet face-to-face and meet new people in the region, raised awareness of the service expectations farmers had of their advisers arising from the Farmer Short Course and were a forum for new technical information. They also provided an opportunity to 'recharge the batteries' on the importance of milk quality to the industry as a way of motivating service provision businesses that were down-sizing and/or depressed by the drought.

The milking machine service sector was particularly affected by the drought. Many businesses have not rebounded. Some technicians exited the industry and others diversified so that they don't depend solely on dairy work for their income. As a corollary, farmers in some regions (especially New South Wales and South Australia) struggled to find technicians and there has been little demand for the new milking machine testing qualification (Fact File: Countdown Downunder Certificate of performance testing of milking machines).

### Case example: a responsive farm team

Scott was a sharefarmer in a spring calving herd of 330 cows in Northern Victoria that had a problem with clinical mastitis at calving (estimated to be about 10 cases per 100 cows calving). He attended a Countdown Downunder Farmer Short Course in May 2002 on the recommendation of his vet. His Mastitis Action Plan focused on ways of reducing clinical cases at calving, staying in premium and monitoring triggers. Scott went out of his way to bring his vet 'up to speed' with the mastitis and milk quality status on the farm and his vet made it his business to understand the situation and contributed to the key decisions being made. The vet focused

on herd-level, cost-effective mastitis management and recognised and supported Scott's needs. This resulted in an ability to respond quickly to sudden increases in the Bulk Milk Cell Count and ultimately a halving of the cell count. At the final interview in September 2003, Scott was happy with the herd's performance:

*"Everything has been going very well. We haven't gone over 250 [,000 cells/mL] for our cell count and we have only had about four cows in total for those five months with clinical mastitis."*

Source: 'Scott' case study #11 (Nettle et al 2005)



**Advisers have a vital role in providing services that help farmers achieve their milk quality goals**

During the drought, neither farmers nor their advisers recognised that the farms needed good support to help make decisions around risk and cost-effective use of limited resources. The insight case studies clearly demonstrated that farmers would have benefited from services that supported herd level and management processes, not just advice on technical issues (Nettle *et al* 2005). This requires advisers to identify what is truly needed to achieve a farm's milk quality goals and for farmers to value this support.

This finding was consistent with an independent industry review of Australia's veterinary services in 2002 which believed that "veterinary practices need to develop and promote the services they can offer to improve productivity in animal production" and "the range of services will have to be more innovative" (Frawley 2003).

The Countdown Downunder Adviser Short Course has trained 387 advisers across Australia who have a special interest in solving mastitis problems and related milk quality problems (Fact File: Countdown Downunder Adviser Short Course). The courses in 2002, 2003 and 2004 had participants from around Australia (earlier courses were essentially regional). Some design modifications were needed to accommodate both this and an increasing number of advisers who were new to the industry.

Since 1999, 114 mastitis investigations have been conducted as one of the course requirements. A new tool enabling a more structured approach to mastitis investigations, the Mastitis Investigation Pack, was piloted in recent courses (Fact File: Countdown Downunder Mastitis Investigation Pack). Encouragingly, the teams investigating mastitis problems after the introduction of the pack achieved better problem definition and produced more workable plans despite being less experienced in the industry than those in earlier courses.

*"... the Mastitis Investigation Pack is a very good framework to use in an investigation. It helps to avoid missing important factors."*

*—Peter Younis, Timboon Veterinary Group, Western Victoria*

The advisory population continually changed as people took on new roles, or entered or left the industry. The names of the veterinarians, milking machine technicians and dairy advisers who have completed the course (and are still active in the industry) are listed on the website at [www.countdown.org.au](http://www.countdown.org.au). All projects that use service providers as their extension frontline must provide ongoing opportunities for training, open discussion and face-to-face meetings to maintain active and effective regional networks.

**As the advisory population is very dynamic, there is an ongoing need for training and update meetings to maintain active and effective regional networks**

## 5 Monitor progress and act on triggers

To maintain a focus on performance and risk management in a changing and complex operating environment, farmers must have the management and technical capacity to routinely assess performance and effectively respond to change.

The outcome of small errors in the daily routine may not be seen for some time and are easy to miss without careful observation. Specific methods to track the situation and make progress on each farm are needed to maintain an effective ongoing management regimen. Farm Guideline 13 recommends that farmers seek professional advice when cell counts, clinical case rates, milk cultures or teat condition exceed a warning level. These measures have been widely adopted as ‘triggers’ for action. They act as an early alert to changes to farm management systems that need to be followed-up.

Triggers were the most highly valued element of the Farmer Short Course and ways of monitoring the herd situation were explored with enthusiasm:

*“... beforehand you just get a mastitis case and you write it down and record it and at the end of the year, if you wanted to, you can print it out and see how many you’ve had. But normally they just sit there ... whereas now you’ve got it in the back of your mind that if you get more than two cows in a hundred in a month you’ve got a problem.”*

– ‘Scott’, case study farmer, Northern Victoria

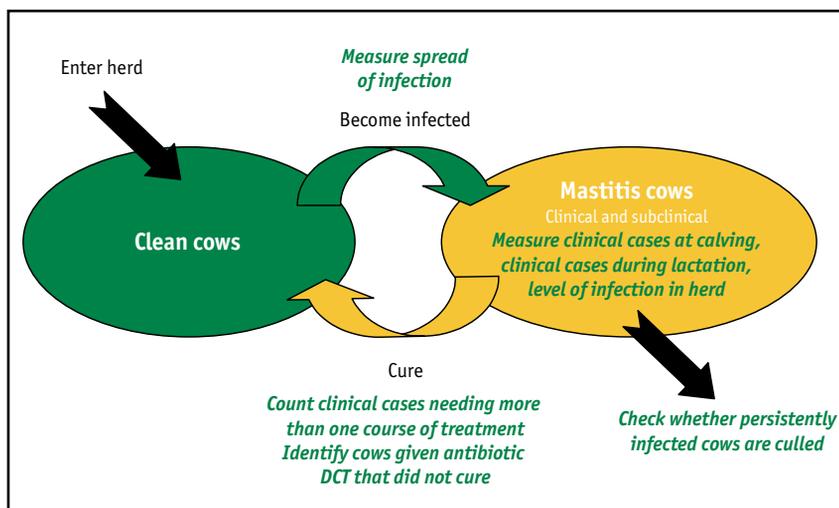
Those committed to using triggers need to keep good records and take the time to analyse them. A one-page report that monitors mastitis dynamics in individual herds, Countdown Downunder Mastitis Focus, is being developed to reduce the workload (Fact File: Countdown Downunder Mastitis Focus). Although it relies on keeping permanent records of information routinely collected on farms, it shifts attention and effort from management decisions around individual cows to the ‘big picture’ – the overall performance of the herd.

**Having practical measures to alert to management changes and trigger action on farm was the most highly valued element of the Farmer Short Course**

**The Countdown Downunder Mastitis Focus report enables farmers to make management decisions at a herd level**

*Farmers committed to using triggers need to keep good records*





**Figure 7: Countdown Downunder Mastitis Focus measures key aspects of mastitis dynamics in herds**

Mastitis Focus provides a more sophisticated analysis than can be achieved manually, especially for herd participating in milk recording. Several key aspects of herd performance are measured and the report emphasises any measure above the trigger level (Figure 7).

Mastitis Focus is currently being piloted. When it becomes widely available in 2006, the report will provide farmers with a powerful monitoring tool to assess herd performance and enable them to respond rapidly to emerging mastitis issues and make strategic decisions for longer term improvement.

Advisers could help build farm management capacity by having an active role in monitoring and reviewing herd performance and including this in the services they offer.

**Advisers can help dairy farmers maintain their focus on performance and help them manage risk**

## 6 Review and update plans regularly

Dairy farmers need to be able to harness information effectively and regularly review their herd's performance so that they can better manage risks and respond to changing circumstances and opportunities.

### **Mastitis Action Plans should enable the technical, management and planning needs to be met**

The goals of Mastitis Action Plans should improve herd performance by bridging the technology or management gaps between the actual productivity on the farm and “what could potentially be produced with better know-how, subject as always to farmers’ preferences and resource constraints” (Anderson and Feder 2003). The insights found that neither farmers nor advisers were fully identifying what was needed to achieve the desired change in herd performance. Although there was good understanding of technical issues, what was needed to get there often lacked consideration of other aspects such as how to involve other members of the farm team or what types of services would help support the change.

The Mastitis Action Plans developed by case study farmers at the course were a valuable tool, providing a clear checklist of what needed to be done and how and when to do it. As a result, all participants sustained changes to products or routines and most achieved their stated goal in the short-term. Although many people were intuitively good at planning and implementing what happened from day-to-day, they tended not to plan strategically to improve performance. Consequently, as circumstances changed, performance was often not sustained because the planning process itself was not being repeated and there was no way of recognising and acting upon the change (see the case example below).

### **Case example: keeping pace with change in a large herd**

Ryan managed a large herd of 850 spring-calving cows in Gippsland which was in premium for much of the year and had recently been in their factory's top 10% for cell count.

Because the farm had recently changed the dairy company it supplied and now had bigger incentives for contract production, Ryan wanted to maintain this performance and avoid the ‘blow outs’ which usually occurred during calving.

He intuitively used many of the course principles to manage a large herd and attain premium payment for much of the year – such as having regularly meetings with the owners and three other full-time employees, discussing issues with his vet and the milking machine technicians and getting the plant tested every six months (changing the rubberware and checking pulsation).

After the course he started using triggers as an early alert to issues and became more strategic in planning to reduce risks according to stage of lactation.

While Ryan was away on holidays in April 2003, the owners had taken on a large neighbouring farm, increasing the overall herd size 1,000 cows, including 200 autumn calving cows. Some employees had left the farm and there had been some big problems with BMCC.

*“It all sort of happened while I was away on holidays, so I came back to it all and had to work my way through it. We have hired new guys to replace the old ones ... we have taken on more land, milking more cows and chasing higher litreage and ... it's added a bit more pressure to things I suppose.”*

Management issues were increasing in both size and complexity:

*“Labour is a really big issue at the moment, I had a barney with one of the guys this morning which I'm still trying to come to terms with it, but it just happens and you just have to deal with it. In the past I'd always think ‘I've got to make sure I do everything properly myself’ but now I just can't keep on doing that and I've got to try and train the other guys up properly.”*

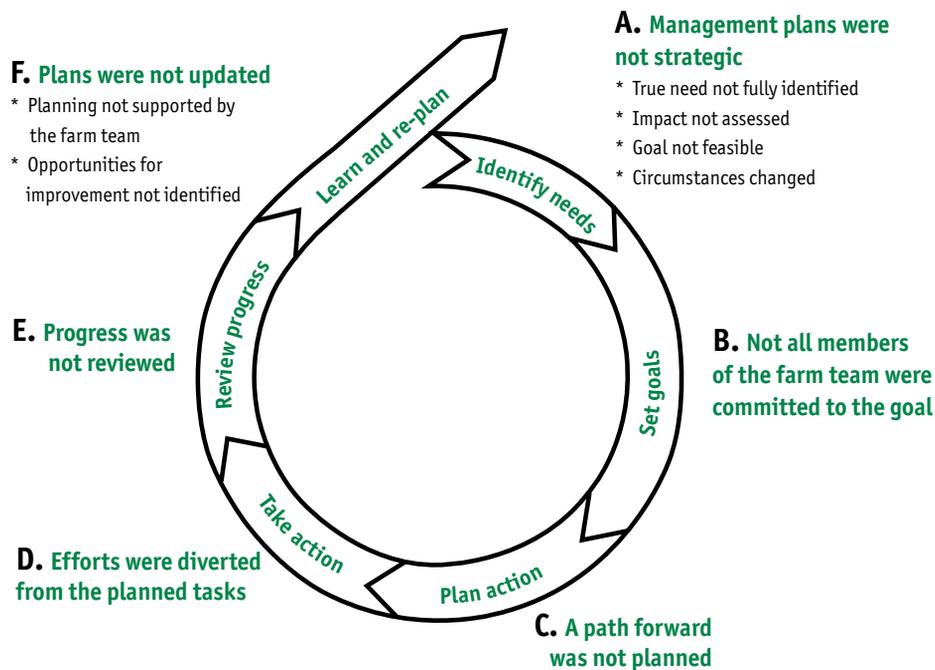
The challenge for Ryan is to make ongoing review of the herd performance his primary responsibility to ensure risks and resources are appropriately managed. There are many opportunities to better use technology and the farm team (employees and advisers) to reduce the management burden on this farm.

*Source: ‘Ryan’ case study #8 (Nettle et al 2005)*

Action planning is a formal process to achieve change by identifying and prioritising needs, setting goals, planning action (deciding what actions are required to achieve the goal, when they should be done, who does it, and what support is needed), taking action, reviewing progress, learning and re-planning. Ironically, farmers regarded all other course elements (interaction with other farmers, using the Farm Guidelines, understanding triggers, communication and teamwork, etc) as more useful than planning.

**At the Farmer Short Course, triggers and communication were more highly valued than planning**

An assessment of the stalling points for the action planning process on insight farms helped identify opportunities for industry to build the management capacity for mastitis and milk quality, providing clear pointers for the next phase of the project (Figure 8).



*Figure 8: Stalling points for the action planning process on insight case study farms (Nettle et al 2005)*

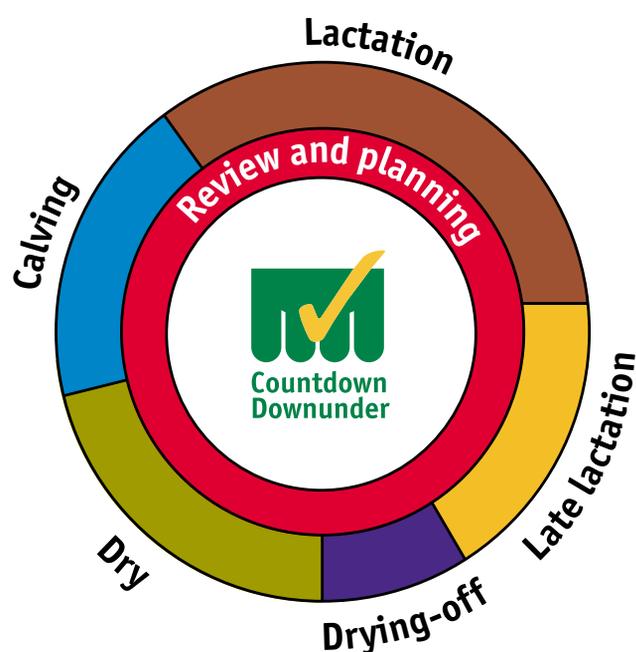
# The next steps 2004-2007

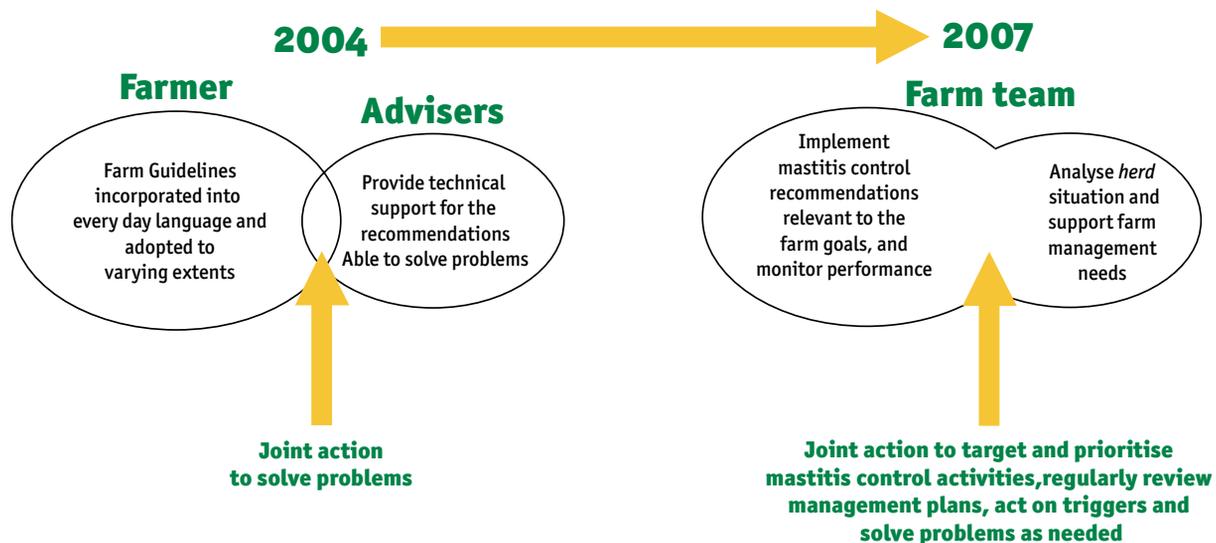
During the next phase of Countdown it is important to engage farms where chronically high cell counts indicate they have major mastitis problems. The Cell Check software package developed by Countdown now provides dairy companies with a way of identifying these herds. Countdown is facilitating a collaborative effort between the dairy companies, the farmers and regional advisers who are skilled to coordinate mastitis investigations and help farmers to solutions for their problems.

A second and broader challenge is to translate the knowledge and skills of farmers, employees and advisers (the whole 'farm team') into continuous improvement and risk management on farm. This could be achieved by embedding the action planning process into routine farm management (Figure 9) and changing the relationship between members of the farm team (Figure 10). The relationship between members of the farm team needs to reach a stage of maturity where:

- advisers have a recognised capacity to improve productivity and returns in the day-to-day business of dairying;
- producers are willing to pay for such service and advice; and
- farmers, employees and advisers are working jointly toward agreed endpoints.

**Figure 9: The original Countdown Downunder graphic describing the stages of lactation (below) has been modified to embed action planning through all stages of the lactation (right)**





The experience of delivering the Farmer Short Course significantly increased the skills and capacity of the trainers involved, particularly the communication involved in achieving change on farms. It also provided an opportunity for closer relationships with farmer clients who participated. Veterinarians who were trainers found they were able to connect more directly with farmers about management issues for months after a course, but that that closeness slowly reduced with time.

In most cases their reasons for visiting farms were the same as before (instigated by farmers around individual animal problems), so opportunities were not 'locked into' a new way of doing things.

*“Part of the joy of the course both for presenters and participants and a reason for its success is the sharing of information together with the friendships that arise. The course creates a language and an approach that enables you to jump into a mastitis investigation or milk quality issue quicker and more deeply. However, unless contact is regular, this connection can fade.”*

– Jamie McNeil,  
 Countdown Downunder Farmer Short Course trainer, Gippsland

The issue of how to establish and grow this relationship between advisers and farmers is common to a number of different projects and domains. Both InCalf and Countdown Downunder are focusing on this challenge in 2005. Analysis of advisory practices that support management of whole farming systems has shown that action plans are a vital resource to the relationship between the management team and the adviser (Mark Paine personal communication). The quality of the action plans has a direct bearing on performance. Well-developed plans are rich with learning opportunities that can be built into subsequent plans by both the farm management team and the adviser.

The design and pilot of a mechanism – a service pack – to enable changes in management culture and promote incremental improvements in performance and better risk management is a major objective for Countdown to 2007.

**Figure 10: A fundamental change in the relationship between the on-farm team and their advisers is needed (Nettle et al 2005)**



**Jamie McNeil (right) with Doug and Alison Billing**



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# Countdown Downunder Farmer Short Course

## PURPOSE

The Countdown Downunder Farmer Short Course offers dairy farmers, managers and staff involved in milk harvesting a wealth of information about managing mastitis. It helps farmers improve udder health in their herds by ‘closing the gap’ between their current management and best practice, following-up on triggers for the early detection of udder health problems and by making better use of the human resource (local service providers and farm employees).

The course was the major focus of the second phase of Countdown Downunder (2001-2004). Consequently the evaluation strategy (including farmer surveys and case studies) was designed to assess the impact of this intervention in the medium term and to identify components integral to building farm management capacity.

## THE PRODUCT

The Farmer Short Course contains 21 hours of adult learning delivered over six days in four hour sessions. Topics include teat biology, calving management, teat disinfection, milking routines, milking machines, clinical case management, Dry Cow Treatment and culling. Over the course participants build a “Mastitis and milk quality action plan” for their herd and risk management approach using the Farm Guideline recommendations.

## CO-INVESTMENT

FarmBi\$ or the Dairy Industry Adjustment Package have been subsidising eligible farmers through the course, considerably reducing the out-of-pocket expense for most participants (Table 7).

## AUDIENCE

Dairy farmers.

Table 7: Out-of-pocket cost of the course to eligible farmers

State	2000 to 2004		2005 onwards	
	Course costs \$697. Eligible farmers pay:	Agency and subsidy	Course costs \$697. Eligible farmers pay:	FarmBi\$ subsidy
Victoria	\$174	FarmBi\$ – 75%	\$349	50%
NSW	\$174	FarmBi\$ – 75%	\$697	Pending
Queensland	\$349	FarmBi\$ – 50%	\$349	50%
SA	\$349	FarmBi\$ – 50%	\$453	65%
Tasmania	\$279	FarmBi\$ – 60%	\$418	60%
WA	\$174	FarmBi\$ – 75%	\$349	50%
WA	\$0	Dairy Industry Adjustment Package – 100%		

## HOW TO USE

The course costs \$697 to deliver. This covers administration, training, training materials (including the Farm Guidelines), venue hire and lunch for six days. Courses are administered by South West TAFE and interested persons are invited to register an interest (by contacting 1800 777 530). A course is held when there is a quorum of 21 registrants in a district.

## HOW IT WORKS

The design and topics covered by the course are described in detail in the report for 1999-2001 (Brightling 2001). In brief, the course is limited to 21 participants to encourage vigorous ‘small group’ interaction. It covers 24 topics and uses real farm scenarios, current farm activities, discussion in small groups and demonstrations to assist learning. Two trainers (from the region) facilitate the course and reinforce its themes in every session so that by the end of the course participants are confidently ‘closing the gap’, using triggers and considering ways of involving their farm team.

## THE OUTCOMES

Since it was first offered in September 2000, 1,804 dairy farmers have participated in a Farmer Short Course. Most groups were “extremely satisfied” with course (Table 8) and 94% of people completed the course.

By the end of the course, participants were more confident in managing cell counts and clinical mastitis (Table 9). They used a sound understanding of the principles of mastitis control and tools and processes from the course – especially triggers, the Farm Guidelines and Mastitis Action Plan – to sustain changes in products, practices and routines on their farms (Nettle *et al* 2005).

Courses were run by 46 of the 63 advisers trained to run the Farmer Short Courses. The trainers have become a local resource for other advisers and farmers in the region because of their familiarity with the science behind the Farm Guidelines and understanding of the types of issues farmers face from day-to-day.

The facilitation and communication skills of trainers also developed during rollout of the courses and other projects were able to capitalise on this increased confidence and capability.

**“After 25 years you think you know it all. But the course helped me step back and see the business differently. Every day there’s a host of small things I do differently.”**

**– Gary Shelton, Northern Victoria, the 1000th dairy farmer to complete the course**

**THE FUTURE**

The Countdown Downunder Farmer Short Course will continue to be run on demand. Complementary packages are being developed to ensure the skills, services and tools needed to support strategic and progressive milk quality management is available to farmers.

**PROJECT LEARNING**

The Regional Project Managers and Farmer Short Course trainers had a critical role in recruiting farmers for early courses, discussing the benefits of the course with advisers in the local network and directly contacting clients and encouraging them to attend. By the end of 2001, the recruiting strategy had evolved into a formal “Farmer Short Course communication kit” with testimonials from farmers who had completed the course and customisable adverts, brochures and press releases. By 2002 the course was selling itself by ‘word of mouth’ within local farming communities.

Despite initial concerns that six days was a major commitment for farmers who had many demands on their time, the training was highly valued by participants and there was a lot of repeat business from farms with multiple employees.

The number of courses peaked in 2002 (Figure 11). Fewer courses were run in 2003 and all but two of the dozen courses planned for 2004 were cancelled due to hardships associated with the drought and a concurrent freeze on FarmBi\$ funding.

Few courses were held in Northern NSW

**Table 8: Dairy farmers were highly satisfied with the Farmer Short Courses**

Region	Courses	Participants	Groups that were highly satisfied with the course*
Gippsland	19	390	95%
New South Wales	8	163	88%
Northern Victoria	28	546	100%
Queensland	3	64	100%
South Australia	10	209	100%
Tasmania	10	209	100%
Western Australia	4	87	100%
Western Victoria	7	136	100%
Total	89	1,804	

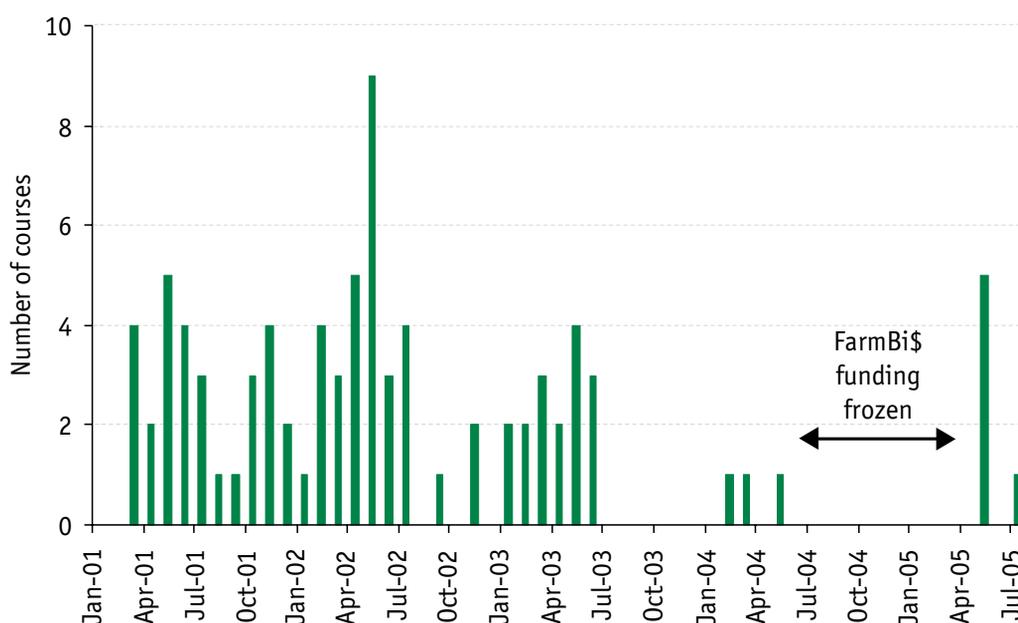
\* This shows the proportion of groups that gave a rating of ‘4’ or above (on a scale of 0 ‘not at all’ satisfied to 5 ‘extremely satisfied’) on the last day of the course.

and none in southern Queensland. Despite flexibility in the course delivery, it proved difficult to generate a quorum of interested participants. Long travel distances for some participants made a six day course unappealing. Changes in the industry in these areas following deregulation and consideration of other options (with soaring land prices) meant a course in milk quality was not a high priority for many farmers.

Individual participants from some courses in Gippsland, Northern Victoria and South Australia were keen to get back together in the weeks after the course to maintain the momentum and their trainers agreed to facilitate the meetings. However few groups continued to meet more than once or twice, probably because a formal commitment and joint focus on a set endpoint was needed to keep the groups active.

In 2002 and 2003, some Regional Project Managers facilitated discussion groups with the trainers in their region (as pub meetings or teleconferences) to invigorate the teams and encourage learning from each other. Another two ‘train the trainer’ courses were also held to enable interested advisers who had missed the original intake to take on this role.

The course was very effective in improving mastitis control on farms but the *Insights to the dairy industry’s capacity to manage mastitis* showed the planning process was not being used to best effect on case study farms (Nettle *et al* 2005). Review and re-planning is essential to ensure the Mastitis Action Plans remain their focus and relevance. Consequently, future training packages and services will be designed to encourage implementation of both Mastitis Action Plans and the planning process.



**Figure 11: Rollout of the Farmer Short Courses**

**Table 9: Post-course surveys of participants in the Countdown Downunder Farmer Short Course**

	Questionnaires (end of course)	Faxback (November 2004)
<b>About the surveys</b>		
When people attended the course	March 2002 – May 2004	March 2001 – May 2004
Number of responses	417	183
<b>About the participants</b>		
Role on farm		
Owners	29%	67%
Managers/sharefarmers	33%	21%
Employees	34%	11%
Average herd size	366 cows	334 cows
Average number of people working on farm	4.4	Not asked
About the people on the farm		Not asked
Family members	40%	
Full-time employees	36%	
Part-time/casual	23%	
Milk recording	78%	Not asked
Why people came to the course		Not asked
To improve cell count	60%	
To reduce clinical mastitis cases	58%	
To learn more about mastitis	78%	
To improve the way I run the farm	25%	
I was told to come to the course	20%	
Clinical mastitis cases (self-reported)	3.75 cases per 100 cows per month	Not asked
Problems with clinical cases at calving		Not asked
Around calving time	62%	
During lactation	40%	
At the end of lactation	17%	
Herds with average BMCC below 250,000 cells/mL before the course (self-reported)	78%	67%
<b>About the course</b>		
Herds with average BMCC below 250,000 cells/mL after the course (self-reported)	Not asked	96%
Confidence in managing cell counts at end of the course	Rated 4.3 out of 5 (part-time employees: 4.75)	Not asked
Confidence in managing clinical cases at end of the course	Rated 4.4 out of 5 (part-time employees: 5)	6% extremely confident; 60% moderately (65% had increased in confidence)
Mastitis Action Plan goals		Not asked
To stay in premium	19%	
To reduce BMCC	39%	
To reduce clinical cases	40% (half specified at calving)	
Participants who achieved their course goals	Not asked	91% (40% completely; 51% partially)
Participants who set a new goal for their farm	Not asked	50%
Participants regarding course elements as highly useful	Not asked	
Interaction with other farmers		57%
Training by local advisers		63%
Using the Farm Guidelines		49%
Creating an Action Plan		43%
Understanding triggers		69%
Communication and teamwork		52%
Participants highly interested in future support for:	Not asked	
Preventing increases in BMCC in late lactation		61%
Minimising mastitis in fresh cows		80%
Picking up herd problems more quickly		63%
Minimising antibiotic risks in the vat		39%
Dealing with clinical cases		62%
Assessing performance of milking machines		59%

# Insights from farmer progress in mastitis control

## PURPOSE

Research into how Australian dairy farmers make management decisions relating to udder health and milk quality issues on their farms and what factors support or inhibit change in the context of the issues and events experienced on the farm was integral to the evaluation of the second phase of Countdown Downunder. The findings of this qualitative study give depth and understanding to quantitative data on the level of change gained from the post-course surveys and analysis of the national BMCC.

## THE PRODUCT

The insights were published as the *Insight to the dairy industry's capacity to manage mastitis* (Nettle *et al* 2005).

## CO-INVESTMENT

The research team comprised members from Countdown Downunder and from the Institute of Land and Food Resources at The University of Melbourne.

## AUDIENCE

Countdown Downunder, managers of other dairy industry extension programs, people designing training and extension packages for dairy farmers, and advisers wanting to extend the range of services they provide to dairy farmers.

## RESEARCH METHOD

The insights were generated from 11 case study farmers from south-eastern Australia. The dairy farms and operators covered in the case studies proved sufficiently varied to enable concepts underlying changes in management capacity to be explored (Tables 10 and 11).

Farmers were interviewed repeatedly (up to five times) over 18 months to enable in-depth discussions about changes as they occurred in the context of the issues and events experienced on the farm. Semi-structured interviews enabled exploration of how and why farmers make decisions and act on udder health issues, and how they were learning from these experiences. Particular attention was paid to how they applied the concepts and processes covered

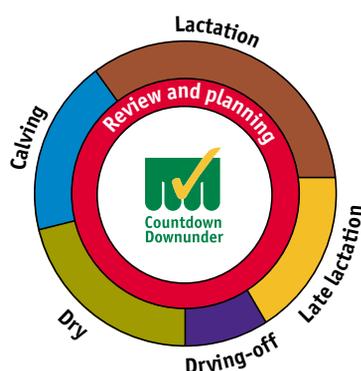


Figure 12: Opportunities for review and planning occur in all stages of the lactation (Nettle *et al* 2005)

## THE OUTCOMES

Findings are discussed in detail in the insights report (Nettle *et al* 2005). Basically all case study farmers improved aspects of their udder health management after the course by changing products and practices to align with best practice as specified on their Mastitis Action Plans. However the planning process was not being repeated in herds and, as circumstances and udder health issues changed on farms, plans and priorities were not being reassessed to maintain their relevance and sustain improvement in performance.

## THE FUTURE

Action plans, the planning process and services that support on-farm management (and not just problem solving) will be explicit in the design of training packages and services developed by Countdown in the next three years. Rather than positioning planning and review at the end of the lactational cycle, review and planning will be promoted at relevant points throughout the lactation (Figure 12).

in the course on their own farm, the role and contribution of advisers to change and the value of their Mastitis Action Plan and the planning process.

## EXAMPLES OF USE

The insights are informing the design of services, training and products to be released in the final stage of Countdown Downunder.

During the second phase:

- the case studies were used to promote discussion of service opportunities at the Countdown Downunder 2003 Adviser Conferences; and
- the research methodology was presented at an agricultural extension conference in Portugal (Nettle *et al* 2004).

Table 10: The 11 case study stories

#1	Steve – The development dilemma
#2	Alf – Motivating the farm team
#3	Jason – Negotiating for change
#4	Grace – Dealing with complexity
#5	Alan – Working without cell count incentives
#6	Donald – When to commit to the basics
#7	Tom – What happens after early success?
#8	Ryan – Keeping pace with change in a large herd
#9	Jeanine – Planning for survival
#10	Peter – The risks of acting independently
#11	Scott – A responsive farm team

**PROJECT LEARNING**

This research was an exercise of learning by doing for all involved. The Countdown interviewers became skilled in prompting discussions on certain topics without interrupting the flow of information or providing counsel. The debriefing sessions provided team members, and importantly the project manager, an intimate appreciation of how and why changes were made on farm following the course.

Eleven case studies extending over 18 months resulted in a vast amount of information that needed processing and managing. A social researcher trained in agricultural systems (the primary author

of the *Insight to the dairy industry's capacity to manage mastitis*) guided the analysis and played a key role in the co-development of the themes and insights.

This research was an integral component of the evaluation strategy for the second phase of Countdown Downunder and represented a significant investment by the project.

The cost of the study – including design of a new evaluation process (Nettle *et al* 2004), recruitment, interviews, analysis and publication – took 140 person-days and is valued at about \$60,000.

**Table 11: Characteristics of the 11 case study farms and farmers (Nettle *et al* 2005)**

	Characteristic	Case study coverage (number of cases shown in brackets)
The people	Role on farm	Owner (5), partner (1), manager (3), sharefarmer (1), family employee (1)
	Age	Less than 30 years (1), 30-40 years (7), more than 40 years (3)
	Gender	Male (9), female (2)
	Time in dairying	Less than 3 years (4), 3-10 years (2), more than 10 years (5)
	Attendance at industry events	Often (1), regularly (6), rarely (4)
	Feel the need to change	Yes (9), no (2)
	Level of reflection	High (8), medium (1), low (2)
The farms	Time of calving	Spring (6), year round (4), autumn/winter (1)
	Region	Northern Victoria (4), Western Victoria (2), Gippsland (2), New South Wales (2), South Australia (1)
	Herd size	Less than 200 cows (3), 200-400 cows (5), more than 400 cows (3)
	Number of workers	Range from 2-4 people (plus casual support for some herds)
	Milk recording	Yes (7), spot (1), no (3)
	Average BMCC for 12 months before course*	Less than 200 cells/mL (5), 200-400 cells/mL (5), more than 400 cells/mL (1)
	Clinical case rate (self-reported)	Range from 5-15 per 100 cows (not given for five herds)
	Major mastitis and milk quality issue on farm	Clinical cases at calving (5), stay in premium (3), high BMCC (1), Strep ag (1), reduce risk of infection (1)
Availability of advisory services in the area	Readily available (7), reasonably available (4)	

\*BMCC were sourced from dairy companies with the farmers permission

# Countdown Downunder 'Cups on to cups off'

## PURPOSE

'Cups on to cups off' helps milk harvesters prevent the spread of new mastitis infections at milking and reduces the risk of antibiotic residues by 'closing the gap' between an individual's current practice and best practice, and encouraging consistent practice across the farm team.

## THE PRODUCT

Countdown Downunder 'Cups on to cups off' is designed for groups of 10–12 milk harvesters. It involves seven hours of training split into three sessions - the second being spent in a dairy during milking.

The topics discuss clinical case management (detection, treatment and cure) and how the milking routine, milking process and teat end health can affect the spread of mastitis.

Course materials consist of the *Countdown Downunder Farm Guidelines for Mastitis Control* and a workbook.

## AUDIENCE

All people who milk cows on the farm including managers, sharefarmers, owner-operators, family members, employed milkers and relief milkers.

## HOW TO USE

The 'cups-on to cups-off' training is being piloted in 2005 and will be widely available in 2006.

Courses will cost about \$220. They will be hosted by advisory businesses or dairy organisations who take responsibility for recruiting interest, organising venues and trainers, and administering the enrolments and monies. Countdown will provide 'Cups on to cups off' kits for hosts (advertising, administration and evaluation aids) and trainers (a trainer's guide and materials including video clips).

Details for proposed courses will be posted at [www.countdown.org.au](http://www.countdown.org.au).

## HOW IT WORKS

Training is delivered by Countdown approved trainers. Before the course, trainers contact the herd owners or managers to build an overview of their expectations and the herd situation.

The training helps individuals clearly define their role and value the contribution they make to milk quality on the farm, develops their understanding of the principles underlying mastitis control and encourages them to align with best practice as described in the Farm Guidelines. At the herd level, it identifies changes that will increase consistency of every cow's milking experience and promotes the use of triggers to enable early response to problems.

Participants develop personalised worksheets to improve the milking routine as part of the final session.

## THE FUTURE

It is anticipated that more than 30 'Cups on to cups off' courses will be held across Australia before June 2007.

## PROJECT LEARNING

'Cups on to cups off' has been developed in response to the high demand for refresher courses and staff training (confirmed in farmer surveys and feedback from Farmer Short Course trainers). The training was designed to 'stand alone' and does not rely on any previous education or experience to achieve its outcomes.

Nevertheless, good mastitis control on farm relies on a consistent milking routine and ALL milkers (including casual and relief staff) implementing best practice. To achieve this and build on the outcomes of 'Cups on to cups off' course, Countdown is concurrently developing a service package that enables the farm team to use their advisers to develop an overt and agreed protocol for the milking routine in their herd. Service Packs will be offered by select dairy businesses from the middle of 2006 onwards.



Figure 13: The 'Cups on to cups off' pilot was held in Cobram in 2005

# Countdown Downunder Mastitis Focus

## PURPOSE

Countdown Downunder Mastitis Focus enables farmers to use routinely collected information to help make decisions about the mastitis and milk quality management of their herd and to detect emerging problems.

## THE PRODUCT

A one-page report that assesses the spread and dynamics of mastitis in a herd, highlighting measures that are above the Farm Guideline warning levels.

## AUDIENCE

All dairy farmers and their advisers. More detailed and comprehensive information is available to those farmers who have cell counts for individual cows.

## CO-INVESTMENT

The Dairy Herd Improvement Fund and Dairy Australia jointly funded the development of a new milk recording reporting system element from concept to pilot of the test version of the program.

## HOW TO USE

Mastitis Focus is still under development. Mastitis Focus reports will be generated by organizations such as herd improvement centres and veterinary practices based on data collected from milk recording, various dairy software and manual entry of herd information. Farmers examine their reports and decide on a course of action for any measures above the trigger value. Advisers will be trained in the process for following-up on triggers.

## HOW IT WORKS

A working group of experienced field veterinarians agreed to a series of performance measures that provide farmers with early warning of potential mastitis and milk quality problems, described in the Stage 1 report to the Dairy Herd Improvement Fund (Brightling 2003). A series of algorithms was developed to derive valid performance measures and the program code for the test version of Mastitis Focus was based on the algorithms. The test version was piloted in two herds and resulted in many clarifications and edits.

## EXAMPLES OF USE

The format of the report was condensed from three pages to a single page following feedback from farmers participating in the On-farm Data Capture project.

Awareness of the new technology was raised in *The Australian Dairyfarmer* (Nov-Dec 2002).

## THE FUTURE

The system will be completed by June 2006 and widely available in two years time. Rigorous testing of the beta-version of Mastitis Focus is required to ensure the program generates robust information for all herds regardless of the source or the completeness of the information. A system will then be developed to enable organisations to generate reports for farmers. Farmers and advisers will receive training to:

- Shift decision-making from individual cows to the checks of the overall mastitis performance of the herd.
- Encourage submission of data (especially clinical case data, Dry Cow Treatments, milk culture results and end of lactation dates).
- Recommend processes for follow-up of measures exceeding the trigger levels.

Although this is a sizeable task, ready access to the information contained in Mastitis Focus reports is critical for success of the final phase of Countdown.

## PROJECT LEARNING

Reports that are useful and informative provide an incentive for farmers to collect the good quality data but can only be produced when good quality data is available. So, given the many combinations of record keeping (with details stored in stock books, QA sheets, information sometimes transferred to the computer, etc), a major challenge for Mastitis Focus is to develop a system that can generate sensible and reliable reports from data of varying quality and completeness.



Figure 14: Farmers want a one-page summary of their mastitis situation

# On-farm Data Capture project collaboration

## PURPOSE

To incorporate research findings on more efficient systems for collecting and recording herd health data on dairy farms (including the usefulness of electronic handheld computers) in the strategy to promote farmer adoption of Countdown Downunder Mastitis Focus.

## THE PRODUCT

Original research conducted by Dr Mike Goddard will be presented in a report to Dairy Australia in late 2005.

## AUDIENCE

Dairy Australia, Genetics Australia, herd improvement centres and organisations interested in herd health data (especially InCalf and Countdown Downunder).

## CO-INVESTMENT

Dairy Australia funded this project through The University of Melbourne and the Australian Dairy Herd Improvement Scheme. Countdown Downunder was one of the members of the project's advisory group supporting the project during its development and at early farmer meetings.

## RESEARCH METHOD

The research was conducted between 2002 and 2005 and involved 85 farmers that participated in milk recording and progeny testing farmers. (All herds tested with either Gippsland Herd Improvement or Western Herd Improvement and the majority progeny tested with Genetics Australia.) Data flow, from farmers through Herd Improvement Centres and finally to ADHIS, was examined for 51 farmers given handheld palm pilot computers, 18 farmers using their personal desktop computer and nine farmers who used a paper-based data system.

Farmers were surveyed at entry (78) and exit (21) to the project to establish patterns of data collection and use. Nine farmers were interviewed in depth to learn about farmers' attitude to using data for information and management. ADHIS data was analysed from 2001 (pre-trial) to 2005 on 31 farms and compared with a control group of farmers not involved with the project.

The palm pilots prompted farmers to collect more detailed information on calving ease than they had previously but did not prompt the collection of herd health information.

## THE OUTCOMES

- The type of data collected by farmers was dictated by habit. Most participants used the information to make decisions about individual cows and few had thought about collecting or using additional information.
- Details about the collection and use of clinical mastitis information by participants on entry to the project are shown in Table 12.
- Most farmers found the palm pilots very user-friendly and simple to navigate (but some farmers will never use them effectively).
- Farmers who used palm pilots captured more fertility, calving ease and health data of higher quality compared to farmers who used personal computers or paper-based systems.
- Once information was transferred to the personal computer, flow to the data processing centres was automatic.
- In contrast, only the 'bare minimum was punched in' when paper-based information was sent to the centre due to cost (issues of who pays), time constraints (especially if information arrived during the busy period) and a lack of awareness by the staff of what needed entering and why.
- Pilot of draft versions of the Countdown Downunder Mastitis Focus report for readability and utility established farmers preferred a single page summary of their herd's situation rather than a longer, more comprehensive assessment.

## THE FUTURE

Learning from the On-farm Data Capture project will be incorporated in the strategy to promote farmer adoption of Countdown Downunder Mastitis Focus.

## PROJECT LEARNING

Useful summaries of herd performance and feedback of the information at critical decision-making times is needed to motivate collection of high quality, comprehensive health data in herds. Unfortunately Mastitis Focus was not sufficiently developed for this purpose at the time of the On-farm Data Capture project.

**Table 12: Use of clinical mastitis information by 69 farmers in the On-farm Data Capture project**

Clinical mastitis information	Survey respondents
Store permanent records:	
In a diary or notebook	32%
On a shed sheet	22%
On QA stock treatment sheets	67%
On the farm computer	41%
Through Milk Recording system	15%
Records show:	
Cow ID	96%
Date	93%
Quarter treated	91%
Product used	80%
Outcome	22%
Culture results	9%
Keep permanent records on:	
All treated cows	89%
Some treated cows	11%
Records are:	
Filed after a quick glance	11%
Useful but not essential	49%
Really rely on them	40%
Use to pick out individual cows	94%
Withhold periods after treatment	79%
To cull during lactation	57%
To cull at end of lactation	65%
To give DCT at drying-off	68%
Use to assess herd mastitis status	45%
Alert for mastitis investigation	61%
Assess clinicals for the season	58%

## Relevant and timely messages for the adviser network

### PURPOSE

To reinforce key messages on mastitis control and milk quality and to provide resources and focus for the advisory network.

### THE PRODUCT

The adviser network is supported by a bimonthly 'Countdown Adviser Bulletin' broadcast by e-mail or fax, an e-mail discussion list for advisers known as Countdown-L, the Countdown website and *ad hoc* communications to regions or professional groups.

### AUDIENCE

Service providers within regions who regularly provide advice to farmers on mastitis control and milk quality (veterinarians, milking machine technicians, factory field officers, herd improvement organisations, product representatives, consultants) and people from stakeholder organisations interested in the topic area (including managers, researchers, policy makers, lecturers, administrators, media) (Table 13).

### HOW TO USE

The Countdown Adviser Bulletin is broadcast by e-mail or fax to more than 1,800 people. Advisers can download short articles ('grabs') from the website for use in their newsletters and publications.

Any service provider can subscribe to Countdown-L by sending a message to: [moderator@countdown.org.au](mailto:moderator@countdown.org.au).

### HOW IT WORKS

As local advisers are the extension frontline of Countdown Downunder, active regional networks enable consistent information and messages about best practice to be delivered to farmers during routine interactions and ensure local advisers are competent and confident in the support they can offer farmers.

The bulletins and regular website updates are based on bimonthly themes, started in September 2000 (Table 14). Themes are chosen because they are topical and/or respond to an emerging issue. They are put together as a package consisting of a Countdown article on the back page of *The Australian Dairyfarmer*, with supporting information sent to advisers in the bulletin and associated grabs posted on the web.

Contributors to Countdown-L exchange thoughts and ideas about real cases. The list is moderated to ensure discussion of different cases and topics are easy to follow, to keep the content non-commercial, and to minimise the risk of spreading computer viruses. In contrast to the first three years of the project, bulletin broadcasts, website updates and moderation of the discussion

list are now done at Countdown central rather than being outsourced. This follows training of central staff and redesign of the website in 2002. Bulletins, which were sent by mail, e-mail and fax in the early stages of the project are now circulated by e-mail only.

### EXAMPLES OF USE

Topical themes were used to support risk management during the drought (for example, *The Australian Dairyfarmer* article on 'The big dry' in January 2003). A bulletin was posted to 150 milking machine technicians in October 2003 emphasising the importance of this group to maintaining good milk quality on farm and encouraging ongoing training.

### THE OUTCOMES

More than 1,800 advisers and stakeholders were kept regularly informed of key mastitis control and milk quality messages (Table 13) and were given ready access to supporting information and resources for Countdown themes (six per year).

About 1,200 people on the list regularly provide advice to farmers on mastitis and milk quality control and 38% are actively involved in Countdown (that is, they have been to an adviser seminar, conference or short course, subscribe to Countdown-L and/or have contributed to the design and development of the project).

Traffic on Countdown-L peaked when the Countdown Downunder Adviser Short Courses were rolling out across the regions. About 400 advisers subscribe to Countdown-L. Peak traffic occurred when the Adviser Short Courses were rolling out across the regions.

Table 13: Mastitis and milk quality advisers across the regions in October 2004

Region	Veterinarians	Milking machine technicians	Dairy advisers	Total
Gippsland	96	40	149	285
New South Wales	102	12	146	260
Northern Victoria	102	49	168	319
Queensland	73	15	109	197
South Australia	32	15	55	102
Tasmania	35	16	99	150
Western Australia	49	10	58	117
Western Victoria	80	27	117	224
National	23	3	183	209
Total	592	187	1,084	1,863

**THE FUTURE**

Over the next few years, Countdown-mediated interactions of members within the regional networks will become more specific and goal orientated, encouraging the different disciplines and organisations to develop strategies and work together toward common goals (such as reducing counts in high cell count herds).

**PROJECT LEARNING**

Countdown’s adviser communications are sent via e-mail with attendant information posted on the website. This was not possible four years ago as many advisers in the regions were not regularly using this technology.

Countdown’s experience has reinforced the wisdom that networks need to be active to be effective and contact lists are only as good as the last time that they were used. The population of advisers and stakeholders has proven to be very dynamic with many people changing roles, leaving or entering the industry each year. Given that local advisers are central to helping farmers improve mastitis control and milk quality, it is important to continue to keep the regional networks informed and up-to-date. This took an annual investment of almost 200 hours: 60 hours to keep current contact details, 100 hours to send regular e-mail bulletins and 30 hours to host the Countdown-L discussion.

Countdown-L traffic has been slow since 2003. Although participants are interested

in the topics that are discussed, most are passive observers. Posting queries to a cyber group is not automatic for most people. While experienced practitioners know many of the subscribers on the list and enjoy contributing to the ‘grey’ zones of information by challenging or supporting accepted wisdom, newer entrants are not as comfortable with this. Countdown-L is worthwhile continuing as it provides an efficient vehicle for keeping people up-to-date and receiving immediate feedback and discussion on industry issues. The list needs to be moderated so that it does not become a burden for subscribers. It would be more active if it had a champion – an authoritative adviser who scouted for issues and put them up for discussion.

**Table 14: Bimonthly communication themes, Sept 2001-2005**

Shorter milking times to reduce mastitis
Massage at the parlour – the role of the teatcup
Best practice requires planning
Stop, seal and heal – well-managed drying-off is the key to udder health and milk quality in the next lactation
Take extra care when milking fresh cows to minimise mastitis and maintain milk quality
Identifying and managing clinical case problems in herds
Using Bulk Milk Cell Counts to your advantage
Hot cows – managing udder health in hot weather
Treatment and control of <i>Strep ag</i>
Australian Breeding Values for somatic cell counts in milk
Culling is the only way to eliminate some mastitis infections
Take extra care with heifers to minimise mastitis and protect the future producers of your herd
Good timing and technique in taking cups off is a cost-free way of reducing mastitis
New information on getting teat disinfection right
The big dry
Do you need a different drying-off treatment strategy?
Robotic milking – is it a different world, or different approach that can help us understand our current milking systems better?
Preventing mastitis over the calving period
Mastitis control makes good economics
Healthy teats – “A great defence mechanism”
Use your advisers to solve milk quality issues as you come out of the drought
Cow behaviour affects milk quality
Make a difference at drying off
Calving rewards at no extra cost
What’s in a ‘Use by’ date?
Are your milking machines spreading mastitis?
Is teat condition a risk factor on your farm?
Does rain and mud have to mean mastitis?
Build a ‘brick wall’ against mastitis
Deciding who should go!
Residues can be risky business

# Countdown Downunder 2003 Adviser Conferences

## PURPOSE

In 2003, regional conferences were held so advisers could meet in person, become familiar with new technical information and materials (available in the 2003 Technote Update Pack), and discuss how farmers' mastitis management expectations changed after they had been to the Farmer Short Course.

## THE PRODUCT

An eight-hour conference for advisers on 'Enhancing capacity to respond to your clients'.

## CO-INVESTMENT

CSL Pty Ltd.

## AUDIENCE

All dairy advisers in the region, including those who had been to previous seminars and courses and new entrants to the industry.

## HOW IT WORKED

All advisers were welcome. Regional Project Managers provided details through their local network and directly invited people on the Countdown contact list.

The Countdown central team (Pauline Brightling, Rod Dyson, Andrea Thompson) and the Regional Project Managers presented the materials.

The conference was held on one day and the total cost per person for materials, the 2003 Countdown Downunder Technote Update Pack and lunch was \$93.50.

The agenda allowed for discussion of:

- the progress in milk quality in the region and its financial implications;
- teat assessment;
- mastitis investigations;
- the performance testing of milking machines;
- the industry position on use of teat sealants; and
- ways of turning farmers' needs into opportunities to provide new services.

There was also a session on leptospirosis acknowledging CSL as an event sponsor.

## THE OUTCOMES

Almost 400 advisers attended 12 conferences in regional centres across Australia between March and June 2003 (Table 15). Many of them had already been involved with Countdown in some form: 75% owned a copy of the Technotes, 47% had been to an Adviser Short Course and 35% subscribed to Countdown-L. Feedback was very positive (Table 16) and most attendees said they would (74%) or might (23%) attend another conference.

## THE FUTURE

Another conference to keep the advisory network active and effective is scheduled for 2006.

## PROJECT LEARNING

The two main challenges in the design of the conference were (1) keeping the sessions interactive given that the group sizes were not small and (2) having materials that would work across a range of professions, levels of experience and

familiarity with Countdown. Consequently, topics that involved a wide cross section of the industry (e.g. teat disinfection) were used to describe the new principles and approaches and devices (e.g. a jigsaw exercise) were included as an 'ice-breaker' to help people get to know others in the industry.

A pilot of the conference identified the need to acknowledge the drought and openly discuss its implications for businesses in the region. This had to be carefully managed so that the uncertain future faced by many did not overwhelm the day's discussion.

The day proved to be a highly successful way of engaging advisers with complex technical material. On reflection, the meeting and opportunity for open discussion enabled participants to engage with the science contained in the Technote Updates in a way that would not have been achievable had they been only available through mail order.

Table 15: Almost 400 advisers attended 12 regional conferences in 2003

Region	Location	Conferences	Attendees
Gippsland	Leongatha, Warragul	2	82
New South Wales	Camden, Taree	2	52
Northern Victoria	Echuca, Shepparton	2	92
Queensland	Gatton	1	28
South Australia	Hahndorf	1	31
Tasmania	Devonport	1	34
Western Australia	Bunbury	1	24
Western Victoria	Colac, Warrnambool	2	55
Total		12	398

Table 16: Conference feedback from 320 participants was very positive

Question	Not at all (none)	A little (some)	A lot	Didn't respond
How did you enjoy the day overall?	0.3%	11%	89%	14
How much of the technical material was new?	0.3%	71%	29%	7
How many of other participants had you met before?	4%	57%	39%	7
Are you more enthusiastic about promoting mastitis control and milk quality to farmers in this region than at the beginning of the day?	5%	39%	56%	12
Do you feel there are opportunities for your organisation to better identify and service farmers' needs?	4%	37%	59%	12

## Countdown Downunder Adviser Short Course

### PURPOSE

The Countdown Downunder Adviser Short Course enables advisers to provide more effective services to their dairy farmer clients by solving mastitis problems using multi-disciplinary teams and new tools and information described in the Technotes. It is also an opportunity for them to personally meet and work with others in the advisory network.

### THE PRODUCT

The Adviser Short Course is an interactive four day course designed for 10 veterinarians, 10 milking machine technicians and 10 dairy advisers. During a 4-6 week break after the third day, participants are required to investigate a mastitis problem on a client's farm in a multi-disciplinary team and present their findings at Day 4 of the course.

### AUDIENCE

Advisers including veterinarians, milking machine technicians, equipment suppliers, factory field officers, milk recording staff and staff from agricultural departments.

### HOW TO USE

The course costs \$995.50 including GST for four days training, materials, Technotes and lunches. Courses are run on a demand basis with at least one course each year. Countdown contacts advisers who express an interest in future courses as well as broadcasting invitations through Countdown-L and the bimonthly bulletin to advisers.

### HOW IT WORKS

The design and topics covered by the course are described in the report for 1999-2001 (Brightling 2001). In brief, courses are delivered on a cost-recovery basis. Separate sessions are run for each discipline on the first day followed by joint sessions on the remaining days. The course is usually facilitated by three trainers, although this can vary depending on the number of participants.

In 2003, the *Countdown Downunder Adviser Short Course Trainer's Guide* (Brightling *et al* 2003b) was updated to incorporate new tools and information, with subtle changes in the style of delivery and some case studies to cater for participants drawn from a national, rather than regional, advisory population and for newer entrants to the industry.

*Advisers solve mastitis problems in multi-disciplinary teams at the Adviser Short Course*



### EXAMPLES OF USE

Advisers who have completed the course and are still active in the industry are listed on the Countdown website [www.countdown.org.au](http://www.countdown.org.au). This enables farmers and other advisers to readily make contact with people who have a demonstrated ongoing interest in mastitis and milk quality.

The Adviser Short Course is a prerequisite for milking machine technicians who want to complete the certificate for the Countdown Downunder Performance testing of milking machines.

### THE OUTCOMES

Fourteen courses have been held (nine regional and five national) with 95% of the 408 participants completing the course (Table 17). In contrast to earlier courses, many dairy companies (including field staff from Bonlac, Dairy Farmers, Murray Goulburn, National Foods, Nestlé, Pauls/Parmalat and Tatura Milk) and product manufacturers have participated in the course since 2001. Seven of the 14 member training team have delivered courses in the past three years. As a result of the courses, there have been mastitis investigations on 114 dairy farms.

### THE FUTURE

As the advisory population is dynamic, there is an ongoing need for training to maintain effective regional networks. The Countdown Downunder Adviser Short Course will continue to be run on demand with at least one course offered annually.

### PROJECT LEARNING

The course is a significant project commitment in terms of cost and time. However, it has been well received by industry, generating 'repeat business' within participating organisations and used to train new entrants in the practicalities of mastitis control and milk quality.

The need for better connections across the relevant disciplines is now well established and other dairy projects (such as InCalf) have adopted a similar multidisciplinary approach to their advisory training.

Table 17: 408 advisers across Australia have participated in 14 courses since 2000

Region	Veterinarians	Milking machine technicians	Dairy advisers	Total
Gippsland	29	32	38	99
New South Wales	17	10	27	54
Northern Victoria	38	15	32	85
Queensland	7	8	8	23
South Australia	9	4	5	18
Tasmania	8	8	13	29
Western Australia	7	4	4	15
Western Victoria	29	17	28	74
National	2	0	3	5
New Zealand	4	1	1	6
Total	150	99	159	408

# Countdown Downunder Mastitis Investigation Pack

## PURPOSE

The Countdown Downunder Mastitis Investigation Pack provides a comprehensive and standard approach to investigating mastitis problems in dairy herds and enables multi-disciplinary teams of professionals to systematically work together to clearly define the mastitis problem in a herd and plan a workable solution.

## THE PRODUCT

The 25-page pack consists of 13 checklists and forms used to record observations about people, cow and environmental factors that can affect mastitis (Figure 15). The pack:

- promotes accurate diagnosis of the bacteria causing the problem in the herd (rather than submitting samples from individual cases) (McDonald 2003); and
- provides the practical means to implement the approach to mastitis investigations described in revised Technote 13 (Feb 2003) of the *Countdown Downunder Technotes*.

## AUDIENCE

Advisers skilled in mastitis investigations, especially those who attended the Countdown Downunder Adviser Short Course and have experience in working in multi-disciplinary teams.

## HOW TO USE

The pack can be downloaded from [www.countdown.org.au](http://www.countdown.org.au) (January 2004) and labelled with the advisory organisation's name. The advisory team uses the Master Sheet to collate, interpret and prioritise herd information.

## EXAMPLES OF USE

The pack and support information was incorporated in the 2003 Technote Updates so it was accessible to advisers. It was introduced through case studies at the 2003 Adviser Conferences to help people engage with the new material.

Since then the packs have been used to complete on-farm mastitis investigations conducted as a requirement of the Adviser Short Course and in 2005 they have been used for the pilot of Cell Count Solutions.

## THE FUTURE

Countdown Downunder expects farmer demand for mastitis investigations to increase in the next three years (100-500 herd investigations) as the Taking Stock and Cell Count Solutions initiatives identify herds where milk quality is significantly limiting profitability.

## PROJECT LEARNING

To provide a workable solution to a mastitis problem, a large number of bases need to be considered with input from various disciplines. Although the technical skills exist in the industry to solve mastitis problems, the Countdown team realised that many advisers struggled to assess the component information and 'pull it all together' when doing investigations on farms as part of the Adviser Short Course. Consequently the Mastitis Investigation Pack was developed.

For the first time, a mechanism was available to help the disciplines jointly analyse their results and agree to a priority list of 'must do' actions for the farmer. The joint understanding of issues in the herd issues also meant advisers were better positioned to provide relevant support in the ensuing months.

Figure 15: The facesheet from the Mastitis Investigation Pack in Technote 13 (Feb 2003)

Countdown Downunder Mastitis Investigation Pack	
Read revised Technote 13 (February 2003) pages 5-15 for a guide to using these sheets and tips for efficient data collection	
<b>A1-7</b>	<b>INVESTIGATION MASTER SHEET</b>
<b>B1-5</b>	<b>Farm Profile</b>
<b>C</b>	<b>Milk Cultures</b>
<b>D</b>	<b>Individual Cow Cell Counts</b>
<b>E</b>	<b>Milking Machine Dry Test</b>
<b>F</b>	<b>Performance Tests of Milking Machines</b>
<b>G</b>	<b>Milking Routines, Teat Cup Slips</b>
<b>H</b>	<b>Clinical Cases</b>
<b>I</b>	<b>Teat Condition</b>
<b>J</b>	<b>Cow Behaviour Milking Time per Cow</b>
<b>K</b>	<b>Completeness of Milking Cluster Alignment</b>
<b>L</b>	<b>Teat Disinfectant</b>
<b>M</b>	<b>The Environment</b>

# Countdown Downunder Technote Update Pack February 2003

## PURPOSE

The Countdown Downunder Technote update pack February 2003 incorporates technical issues and new information relevant to the Australian industry that emerged since the Technotes were first published in January 2000 (Table 18).

## THE PRODUCT

The updates come as a shrink wrapped pack of 72 double-sided, four hole-punched pages with four revised Technotes (7, 9, 13 and 25), a revised FAQ sheet ('Teat sealants'), three new FAQ sheets (on 'Liners', '*Strep ag*' and 'Withholding periods') and a new index.

## AUDIENCE

The Technotes are an information resource for people who advise Australian farmers on issues of udder health and milk quality.

## HOW TO USE

The update pack can be ordered from Countdown (an order form is also available from the website). It costs \$38.50 including GST or \$108.35 for the complete revised Technote package. Advisers are encouraged to incorporate the update pack into their Technote folder, placing the new pages in their correct position and removing outdated material from the folder.

## EXAMPLES OF USE

The new technical material was discussed with the 398 advisers attending the 2003 Countdown Downunder Adviser Conferences. There have been multiple news articles about the impact of water quality on teat disinfectants, the role of teat sealants in the dry cow strategy (including an insert 'Make drying off count' in *The Australian Dairyfarmer* May-June 2004) and monitoring teat health.

## THE FUTURE

Another update pack will be released in the third phase of the project to describe new tools and processes that will become available to the industry – supporting Mastitis Focus and Cell Check in particular.

## PROJECT LEARNING

The Technotes were designed in a loose-leaf folder to enable new information to be incorporated and to ensure the science and research priorities maintained their relevance. This process has been ongoing with revisions and add-ins posted on the

Countdown website. Print and publication of the Technote Update Pack gave advisers ready access to a large volume of new information. Use of the pack as the core technical material in the 2003 Adviser Conferences was key to helping them engage with the materials.

**Table 18: Examples of new information incorporated in the Technote update pack**

Technote 7	Clear direction on what to do if teat disinfectant is unregistered
	Factors to consider when selecting and reviewing teat disinfectant on farm
	Tips for testing the final mix of teat disinfectant solutions and water on farm
	Practical methods of providing high quality water for many tasks in the dairy (making up teat disinfectants, preparing udders and washing equipment) was identified as a research priority (moderate)
Technote 9	Changes to the labelling requirement of new products so they are consistent with industry recommended guidelines
	A worked example of how to add emollient and maintain active ingredient at the correct concentration in the final mix
	More efficient methods of dispensing teat disinfectants to improve teat skin coverage and minimise labour was identified as a research priority (high)
Technote 13	Revised teat end scoring system and recording sheet for teat condition consistent with international teat evaluation methods
	The need to refine interpretation of teat evaluation (especially thresholds of concern for different teat conditions) was identified as a research priority (moderate)
	A sample size guide for detecting teat abnormalities in the herd
Technote 25	A table showing how various machine factors, milking management and environmental factors can influence teat condition
	A flow chart showing the general approach to investigating a mastitis problem
	A detailed description of how to use the Countdown Downunder Mastitis Investigation Pack
Liners	Tips for efficient data collection during milking-time tests and observations
	A better understanding of how advisers can package and deliver their services in a way that encourages farmers to adopt the recommendations was identified as a research priority (moderate)
<i>Strep ag</i>	A detailed description of Countdown reports for the performance testing of milking machines
	A guide for determining whether liners need changing – replacing old liners or changing to a different type of liner
Teat sealants	The keys to eradicating <i>Strep ag</i> in dairy herds
	A clearer, simpler set of physical guidelines to indicate when liners have reached their 'use-by' date was identified as a research priority (high)
	Which herds benefit from using teat sealants
Withholding periods	A guide to choosing an appropriate dry cow treatment strategy (the revised Countdown Downunder Farm Guidelines for Mastitis Control Fact Sheet C)
	A model that enables advisers to assess the cost benefit of dry cow strategy option in individual herds was identified as a research priority (high)
	Understanding of practical issues that determine the success of using teat sealants in Australian dairying systems was identified as a research priority (high)
Withholding periods	A summary of milk and meat withholding periods following the use of intramammary antibiotic lactating or dry cow treatment (superseding the tables in Technote 3.1 and Technote 4.10)

# Countdown Downunder Certificate for the performance testing of milking machines

## PURPOSE

The Countdown Downunder certificate provides a new qualification for technicians in performance testing of milking machines. It builds on the mechanical (dry) testing qualifications and underpins the technicians' role in assessing machines for mastitis control.

## THE PRODUCT

The 'Countdown Downunder Certificate in Performance testing of milking machines' demonstrates advanced skills in milking machine testing. Certified technicians are listed on a special registry on the Countdown website.

## CO-INVESTMENT

Certification is offered and administered by the National Milk Harvesting Centre (University of Melbourne).

## AUDIENCE

Milking machine technicians who have completed the technician's stream of the Countdown Downunder Adviser Short Course.

## HOW TO USE

Candidates pay \$300 to enrol for assessment.

Assessment involves:

- attending a Countdown Downunder Adviser Short Course;
- contributing to the group Farm Assignment during the course;
- submitting five completed Sheet F from the Countdown Downunder Mastitis Investigation Pack (personally undertaken and recorded by the candidate);
- submitting dry test reports for each of the five milking machines completed within three months of the performance tests (not necessarily performed by the candidate, but they must be able to interpret the dry tests and recognise any discrepancies);
- being interviewed by an assessor about the submitted reports (for 30 minutes by telephone).

Resource materials are the booklet Countdown Downunder Performance tests of milking machines (January 2004), Technote 25 (February 2003), the new 'Liner' FAQ Sheet in the Technotes (February 2003), Sheet F from the Countdown Downunder Mastitis Investigation Pack (January 2004), and the Australian National Training Authority Training Package for RTE4305A (March 2003).

## HOW IT WORKS

The competencies cover four areas: systematic assessment of cluster components, performance tests of the effectiveness of vacuum regulation, a performance test to ensure that the average claw vacuum levels are within the recommended range, and a performance test of vacuum stability in the milkline and receiver.

## THE OUTCOMES

A panel of three industry assessors (John Ryan, Paul Hemming and Graeme Mein) has been set up and an assessment protocol developed and tested. One candidate has successfully attained the certificate. This type of certification formally recognises those with advanced skills in mastitis control and provides the industry with a readily identifiable and transferable resource of people who are committed to performing at an established standard.

## THE FUTURE

Collaboration with dairy equipment manufacturers and distributors is expected to enable this qualification to be offered as in-service training for their technicians.

An international working group (co-ordinated by Professor Doug Reinemann from the University of Wisconsin-Madison and including Rob Greenall, Paul Hemming and Graeme Mein as the Australian representatives) has been established to deal with some of the problems involved in training technicians, especially those based in remote regions. The group is developing web-based technical material to facilitate and supplement face-to-face training.

## PROJECT LEARNING

This qualification was developed in response to a perceived gap between skills and experience. It provides milking machine technicians with an avenue for becoming experienced in using new skills learnt at the Adviser Short Course and formally demonstrating their proficiency.

Many techs are now aware of what performance tests involve, but few use them in their routine business. When the certificate testing became available, many techs were leaving the business or had changed their focus due to the drought. Their peak representative bodies were in the process of disbanding (the Australian Dairy Equipment Council) or were less active (the Australian Milking Machine Trade Association). Circumstances were far from ideal for promoting ongoing in-service training.

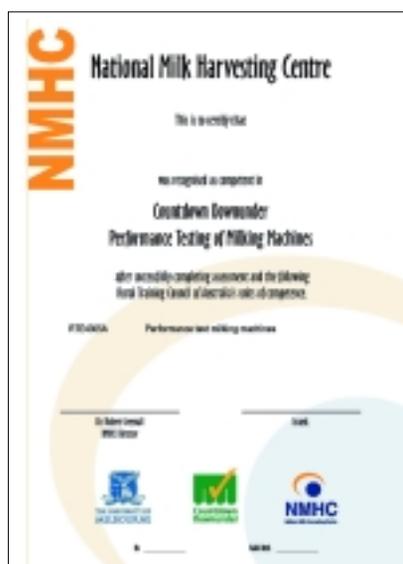


Figure 16: The Countdown Downunder Certificate for Performance testing of milking machines

# A new approach to managing antibiotics

## PURPOSE

Issues and opinion from stakeholders were used to determine the need for an industry-wide antibiotic plan.

## THE PRODUCT

A report to the Australian Dairy Industry Council's Technical Issues Group on *A new approach to managing antibiotics* (Brightling *et al* 2001).

## AUDIENCE

Industry representatives from:

- Avcare;
- Veterinary Manufacturers Distributors Association;
- Department Natural Resources Environment;
- National Registration Authority;
- Australian Quarantine Inspection Service;
- Australian Veterinary Association;
- Australian Mastitis Advisory Council;
- Australian Dairy Farmers Federation;
- Australian Dairy Industry Council;
- Dairy Research and Development Corporation;
- National Milk Harvesting Centre;
- Australian Starter Culture Research Centre;

- dairy processing companies;
- food safety authorities;
- National Antibacterial Residue Minimisation program; and
- Australian Dairy Corporation.

## THE PROCESS

Stakeholders were invited to participate in a Dairy Industry Antibiotic Forum in August 2001 to discuss issues currently faced by their organisations and sectors using the problem tree approach (AusAid 2000). The consultancy team analysed the issues to identify the 'root causes' and to recommend a way forward.

## THE OUTCOMES

The consensus at the forum was that there was the need for an industry-wide antibiotic management plan to achieve effective, sustainable use of antibiotics and to meet community and customer requirements. A prime motivation for this is to maintain animal health and well-being through continued access to antibiotics effective against the bacterial infections of cattle. The need was also driven by community concern about the use of antibiotics in food animals and the implications for human health.

The consultancy team believed that:

- It costs the dairy industry about \$17 million per year to ensure that product is free of antibiotic residue (a conservative estimate).
- Information and communication deficiencies were the root cause of most issues raised at the forum and that all issues ultimately impact on decisions made at the farm level.
- Managing antibiotics in the dairy industry is primarily about supporting good decision-making on farms.
- Industry could develop guidelines to provide clear messages and science to support individual organisations when they formulate antibiotic policy and respond to antibiotic-related issues by drawing on existing knowledge and expertise.
- The design of an information framework requires dedicated resources and funding.

## THE FUTURE

Dairy Australia's Technical Issues Group has taken the responsibility for developing an industry-wide approach to antibiotic management.

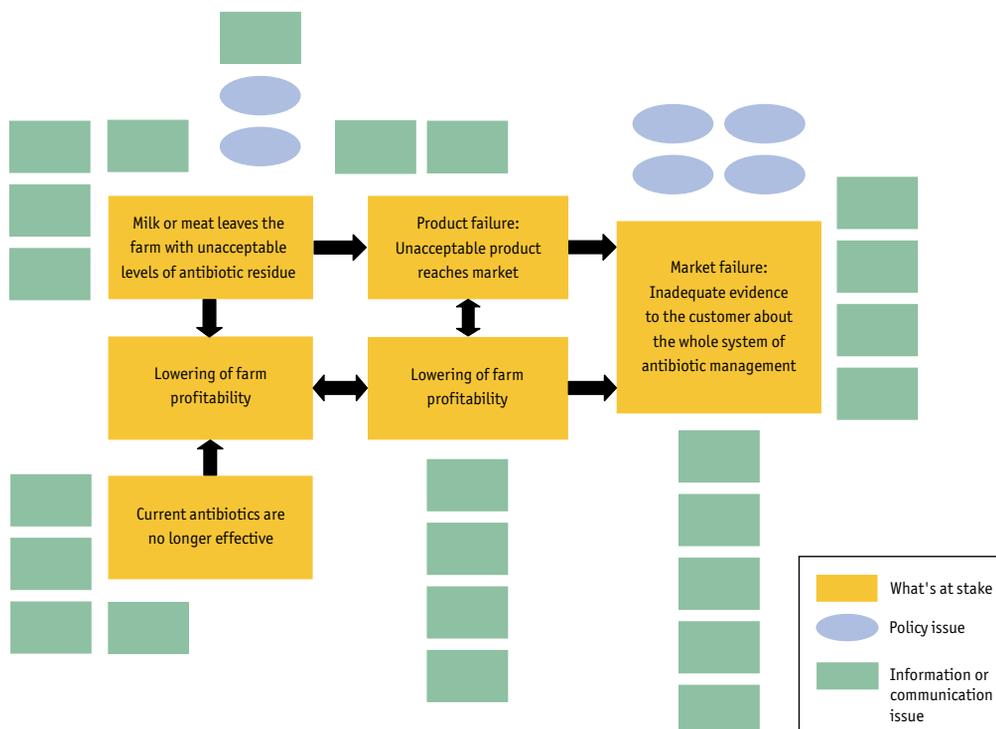


Figure 17: Clustering of antibiotic-related concerns in the dairy industry (simplified from Brightling *et al* 2001)

# Cell Check

## PURPOSE

Cell Check enables dairy processing companies to produce cell count measures consistent with the European Community cell count reporting requirement (92/46/EEC). The availability of such a system helps the Australian Quarantine Inspection Service certify dairy produce for export to some countries.

## THE PRODUCT

Cell Check is custom-designed software that lists suppliers whose herds have a volume-weighted geometric average cell count above 400,000 cells/mL (e<sup>5.99</sup>) in the three months before the test date. The report has a section where dairy company staff can document actions taken for individual high cell count herds. The Cell Check program is supported by a user's guide and Technote FAQ sheet. This kit was developed by Countdown Downunder and is available to dairy processing companies from the Australian Quarantine Inspection Services on request.

## AUDIENCE

Dairy processing companies exporting dairy produce to the European Union (EU).

## HOW TO USE

The Cell Check algorithm is explained in detail available in the *Cell Check user's guide* (Hope and Schweitzer 2005). It calculates a volume-weighted geometric average of the bulk milk cell counts measured in the 90 day period before and including the test date for individual suppliers and identifies herds where the back-transformed average value exceeds 400,000 cells/mL.

Figure 18 shows the flow of information through the Cell Check system. Companies exporting to the EU are advised to run the program or equivalent algorithm once a month and take appropriate action (defined by the company policy) for results that fall outside the acceptable limits. Ways of managing high cell count herds are described in the 'Cell Check' FAQ Sheet (Jan 2005) of the *Countdown Downunder Technotes*.

## EXAMPLES OF USE

A test version of Cell Check was piloted with Murray Goulburn in 2003. Data from Bonlac Foods and Tatura Milk was used to validate version 1.2 of the program.

## THE FUTURE

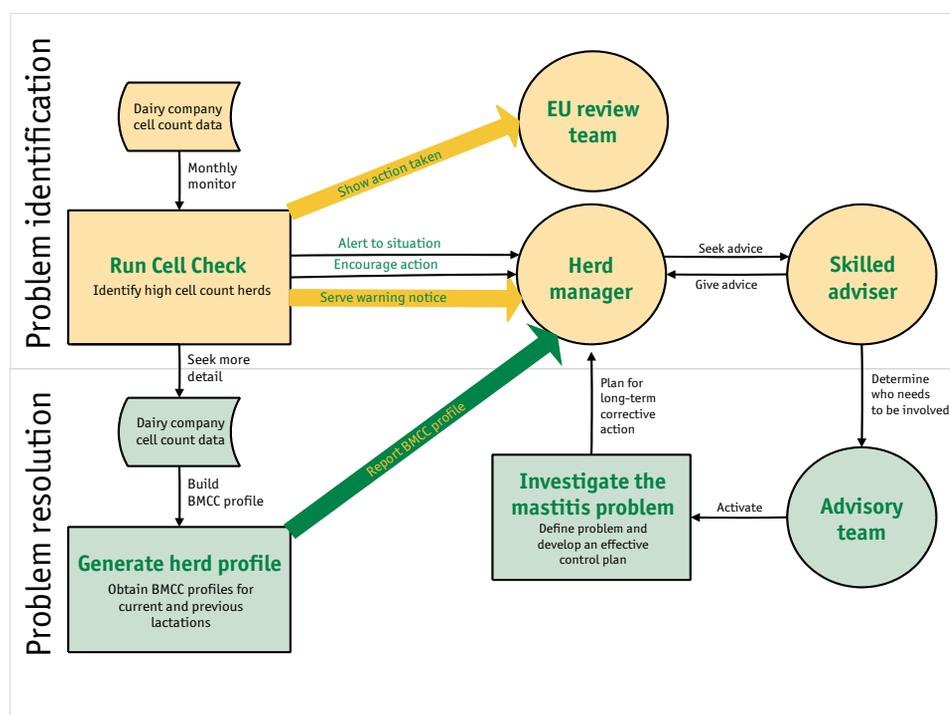
Herds with a chronically high cell count have a mastitis problem. Countdown is facilitating collaboration between dairy companies, farmers and regional advisers to promote mastitis investigations and problem resolution in high cell count herds. This initiative, known as Cell Count Solutions, is being piloted and should be available to companies in all regions by the end of 2005.

## PROJECT LEARNING

This element of Countdown has reinforced the benefit of synchronising the release of new technology with relevant events. An audit of the dairy industry by the European Union in early 2005 provided the impetus for exporting companies to incorporate the Cell Check algorithm into their reporting systems. The results, in turn, have galvanized some factories to take action to reduce the number of chronically high cell count herds in their supply base through policy decisions and initiative such as Cell Count Solutions.

The capacity to use and integrate the software varied greatly within and between companies depending on the availability of information technologists.

Figure 18: Flow of information through the Cell Check system



# Countdown Downunder Mastitis Model

## PURPOSE

The Countdown Downunder Mastitis Model is a research tool used to help prioritise research and extension efforts for national improvement by ranking economic benefits of different mastitis strategies.

## THE PRODUCT

The model is custom-designed software that simulates the spread and dynamics of mastitis in an experimental population of cows.

## AUDIENCE

Researchers and other persons interested in assessing the relative impact of different management factors on the spread of mastitis.

## HOW TO USE

The software is available to registered users who have obtained a user name and serial number from Countdown Downunder.

The user specifies a population profile (size, age and calving pattern) and the type of infection in the population (*Staph aureus*, *Strep uberis* or *Strep ag*). They then

set up a base strategy (describing replacement rates, culling, drying-off, herd testing, lactation therapy, dry cow management and new infection rates) and compare this to other management strategies by changing the value of the variables.

The model calculates the economic difference between the two strategies - that is the net dollar value when all effects are taken into account. Component changes (such as changes in bulk milk cell count, prevalence of infection and milk production per cow) can also be viewed in graphs and spreadsheets.

## HOW IT WORKS

A stochastic (probability based) computer simulation predicts the outcome for individual cows on a daily basis and these outcomes are summarised across the population. It incorporates expert field experience and information from over 150 research publications. A detailed explanation of the modelling method and operating instructions for the software are available in the user's guide (Larcombe and Shephard 2004).

## EXAMPLES OF USE

The model was used to assess the economic benefits of improving mastitis control for the Countdown 2003 Adviser Conferences and the 2004 to 2007 project brief (Brightling and Dyson 2004).

## THE FUTURE

The model is being distributed to some dairy veterinarians to explore research scenarios, such as management alternatives for *Strep uberis* at calving, using parameters that represent the cow population in their region.

## PROJECT LEARNING

The Mastitis Model was instrumental in demonstrating that herds achieving premium cell counts could economically benefit from further reductions in their bulk milk cell count.

### Example of modelling: The long-term effects of drought

Changes in risk (or control) factors for mastitis often have effects which are expressed over time. The Countdown Downunder Mastitis Model was developed to enable long-term comparison of different strategies.

In 2002 the model was used to explore the consequences of mastitis control strategies which were considered likely to emerge under conditions of drought.

Figure 19 shows simulation of Bulk Milk Cell Counts in a 400-cow herd with split spring-autumn calving under two different management scenarios:

- Base strategy (yellow line): excellent mastitis control procedures including

100% efficient post-milking teat disinfection and 'closed herd' approach, and

- Comparison (green line): cessation of teat disinfection in August 2002 plus milking of adult cows of unknown mastitis status from other herds (equivalent to hosting 'cow parking').
- Cell counts rise during the first year of the cow parking scenario as the number of infected cows gradually increases. In the second year, most Bulk Milk Cell Counts exceed 250,000 cells/mL. By the third year most counts exceed 400,000 cells/mL.



Figure 19: Modelling the long-term effects of hosting 'cow parking' on cell counts

# Milk Quality Awards

## PURPOSE

The Australian Milk Quality Awards recognise suppliers who consistently supply milk with the lowest 5% Bulk Milk Cell Counts (BMCC) each year.

## THE PRODUCT

The *Weekly Times Countdown Downunder Milk Quality Award* is the national milk cell count award.

## AUDIENCE

Australian dairy farmers, dairy processing companies and consumers.

## CO-INVESTMENT

The *Weekly Times* has sponsored the annual national award since its inception in 2001.

## HOW TO USE

The *Weekly Times* interviews winners, writes feature articles and publishes these alongside lists of regional winners and the Top 100 across Australia between March and June each year. Countdown Downunder posts winners names on its website, organises a ‘diamond’ (metal plaque) for each winning herd (Figure 19) and sends certificates of achievement to managers of the Top 100 herds. Many dairy companies host awards nights and write articles about the winners in their newsletters.

## HOW IT WORKS

Each year, dairy companies across Australia are invited to participate in the award. It is run at the first quarter of the year based on BMCC data for the previous calendar year. To be eligible, suppliers must have BMCC data for at least nine months of the calendar year.

The Australian Dairy Herd Improvement Scheme calculates the annual average BMCC of each supplier and then ranks the BMCC values from lowest to highest. The 5% of suppliers with the lowest annual average BMCC win the award.

Administration of the award requires the coordinated input of information from many sources and this is described in detail in a manual of procedures (Hope and Brightling 2003).

## THE OUTCOMES

Most dairy companies participate in the annual award and it is well-received by all those involved (Table 19).

The number of eligible suppliers reduced in 2003 and 2004 as farmers exited the industry or changed the company they supplied (Table 20).

## PROJECT LEARNING

Many winners of the Milk Quality Award are recognisably commercial dairy farms and stand testimony to their ability to consistently achieve very low cell counts. Furthermore, some of the winners have had previous mastitis problems and stories about their approach to control and ultimate success provides inspirational reading.

As mastitis is multifactorial, attention to day-to-day management often succeeds where ‘silver bullet’ treatments fail. This can become a challenge when writing articles about consistently high achievers as the temptation to think and feature the extraordinary often overrides stories about good and consistent management.

**“Farmers were very pleased to receive recognition for their efforts to produce high quality milk.”**

**– Laurie Cransberg, Farm Services, Challenge Dairy Co-operative, Western Australia**



Figure 20: Winners of the national Milk Quality Award receive metal fence plaques

Table 19: Dairy companies participating in Milk Quality Awards 2002–2005

Bega Cheese Co-operative
Bodalla
Bonlac Foods
Burra Foods
Cadbury Schweppes
Challenge Dairy
Dairy Farmers Co-operative
Gerringong
Green Valley
Lactos
Murray Goulburn Co-operative
National Foods
Nestle
Norco
Pantalica
Parmalat
Pauls
Peters and Brownes
Tatura Milk Industries
United Dairy Power
Warrnambool Cheese and Butter Factory

Table 20: Herd numbers have reduced since 2000

	2000	2001	2002	2003	2004
Number of dairy processing companies participating in the award	18	21	21	20	20
Number of suppliers	12,242	11,921	11,017	10,168	9,730
Number of eligible herds	9,876	10,101	10,003	8,835	8,531
Number of winners	464	497	508	441	455

## National and regional cell count statistics

### PURPOSE

Milk cell count statistics are generated annually to demonstrate progress toward the dairy industry cell count goals set in 1998. The industry cell count goals are for all milk supply to be below 400,000 cells/mL and at least 90% of supply to be below 250,000 cells/mL.

### THE PRODUCT

The annual cell count statistics were initially derived from Herd Milk Cell Counts (HMCC). With the advent of a national Bulk Milk Cell Count (BMCC) data set in 2001, BMCCs superseded HMCC as the preferred measure (differences in the data sets are described in Table 21, Figure 21).

### AUDIENCE

Industry organisations, dairy farmers and advisers.

### HOW IT WORKS

Progress toward the dairy industry goals is assessed by the proportion of BMCC below 250,000 cells/mL and 400,000 cells/mL respectively. Since 2003, the Australian Mastitis Advisory Council has adopted the International Dairy Federation's recommended method for reporting cell count status to international audiences by calculating the geometric average of all herds' geometric averages (Smith 1997). HMCC are useful for exploring temporal trends in cell counts because they pre-date BMCC and can be analysed in terms of other milk recording data.

### THE OUTCOMES

For the first time since Countdown began, the steady progress toward the dairy industry cell count goals reversed in 2003 (Table 22). Numerous management factors contributed to the reversal of the cell count trend. In 2003, unprecedented regional issues associated with the 'one-in-100-year' drought, high feed costs and low farmgate milk prices forced many farmers to compromise management decisions to survive financially in the short-term. Management decisions made in 2003 affected cell counts in 2003 and 2004. The eight dairying regions were affected to varying extents (Figure 22).

Based on the International Dairy Federation's method for international reporting of cell counts, Australia's cell count in 2004 was 208,000 cells/mL (Figure 23).

Table 21: Differences between the BMCC and HMCC data sets

	Bulk Milk Cell Counts	Herd Milk Cell Counts
Data individual	Raw or average BMCC measures supplied by the dairy companies	Volume-weighted average of all cow cell counts at each herd test
Source	Herds participating in the Milk Quality Award	Herds participating in milk recording (from the same population of cows used by ADHIS to report annual production)
Number of herds	About 10,000	About 5,700
Available since	January 2000	July 1997
Frequency of data collection	Usually daily, but can vary from company to company	At each herd test, about 7 per farm per year
Report cycle	Calendar year	Fiscal year
Application	Assessing progress toward industry goals and reporting national status	Assessing long-term trends in cell counts

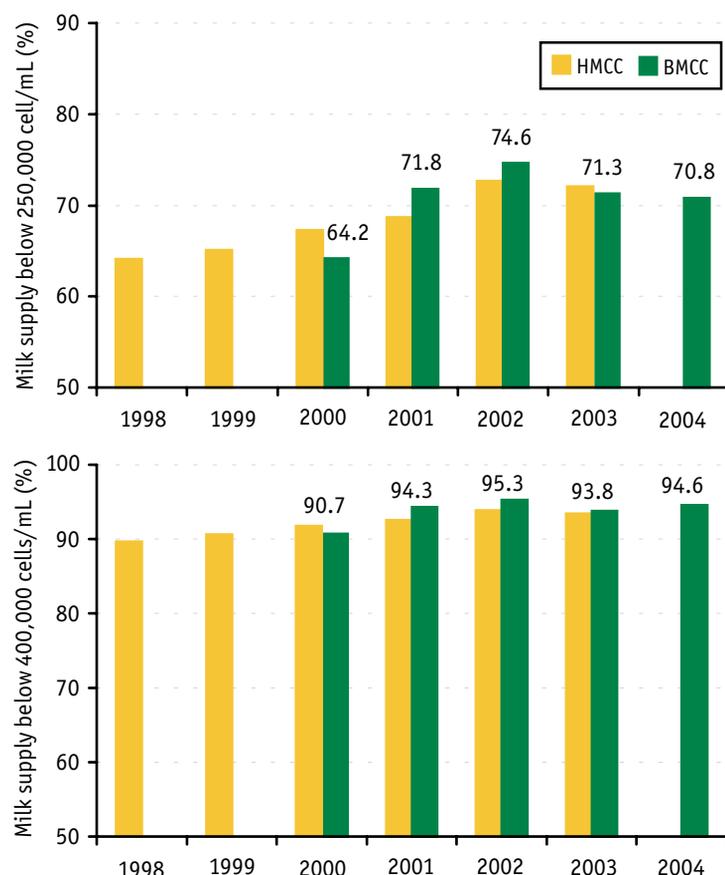
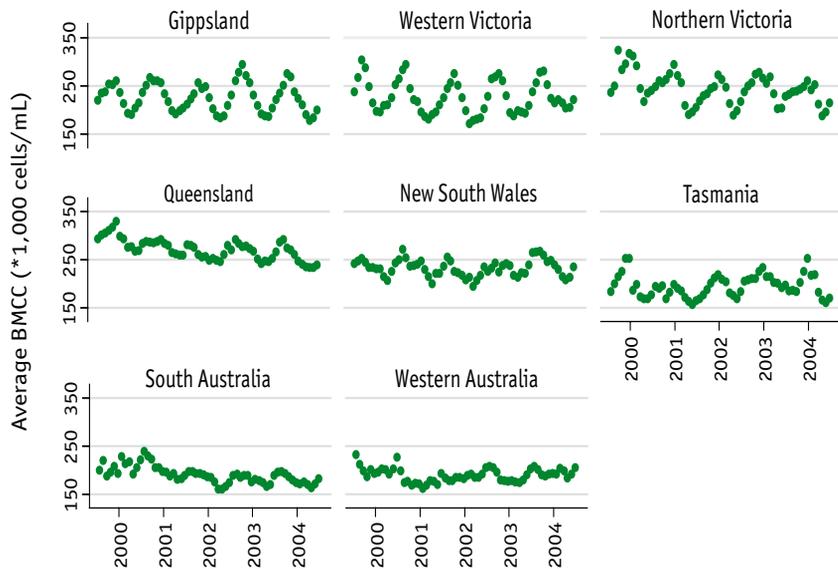
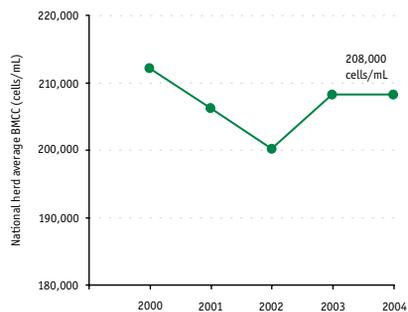


Figure 21: Consistent results from two independent cell count data sets

**Figure 22: Cell count trends across the regions from January 2000 to December 2004. The number of infections in herds increase over a lactation – a pattern that is most obvious in regions with seasonal supply**



**Australia’s cell count in 2004 was 208,000 cells/mL based on the International Dairy Federation’s method for international reporting of cell counts**



**Figure 23: Cell count of the national herd**

**EXAMPLES OF USE**

Countdown reports the cell count statistics in the second quarter of each year to the peak industry bodies through the Australian Mastitis Advisory Council. The statistics are then incorporated into the Countdown communication and evaluation strategies. Information is given to companies on request to support export certification claims. Trends in HMCC are described annually in the National Herd Improvement Association.

The herd annual average cell counts have been used with the Countdown Downunder Mastitis Model to determine the economic benefit of improving mastitis management in Australia.

**THE FUTURE**

It is important to keep abreast of the International Dairy Federation debate on defining ‘abnormal milk’ as new international standards for milk quality

(devised to accommodate robotic milking) could ultimately change how Australian dairy farmers need to manage milk quality on the farm.

**PROJECT LEARNING**

The ability to generate a national cell count statistic relies on the willingness of dairy companies to participate in the annual Milk Quality Award.

Measures of somatic cell counts in milk are more about farm profitability, animal health and product marketability than food safety. Given both national and international interest in Australia’s cell count statistic, the communication strategy must be finely balanced to motivate farmers to improve productivity and animal health without damaging the wholesomeness of the product.

For many customers, quality assurance now requires control to be demonstrated at critical points throughout the supply chain as well as testing of the end product.

**Table 22: Progress toward industry cell count goals since 2000**

Year	Milk supply with BMCC below 400,000 cells/mL	Milk supply with BMCC below 250,000 cells/mL	Number of farms	Number of vats
Industry goal	100%	90%		
2004	94.6%	70.8%	9,730	407,221
2003	93.8%	71.3%	10,167	532,312
2002	95.3%	74.6%	10,978	554,879
2001	94.3%	71.8%	11,953	538,033
2000	90.7%	64.2%	12,242	409,800

# Fulfilment of the 2001-2004 Project Brief

Countdown Downunder goals for 2001-2004:

1. Work toward the industry cell count goals of having all milk supply below 400,000 cells/mL and 90% of supply below 250,000 cells/mL;
2. Lower the number of clinical cases of mastitis in the Australian dairy herd by 20%; and
3. Contribute to an industry-wide plan for sustainable and effective use of antibiotics.

The third goal was achieved in full and the first two were achieved in part.

The dairy industry decided on the cell count goals in 1998 to promote productive and profitable improvements in milk quality. When Countdown established a national cell count statistic in the first stage of the project, it became apparent that the

goals set more of a challenge than had been anticipated. Everyone remained committed and steady progress in lowering the national cell count was made. By 2003, management effort went into financially surviving the 'one-in-a-100-year' drought. This took precedence over mastitis control and milk quality issues. The downward trend in the national cell count was not maintained and it reverted to its 2001 level. The detrimental effect of the drought will continue into 2004 and 2005 for many farmers. Farmers who had attended the Countdown Downunder Farmer Short Course were able to reduce their cell count in 2003 in contrast to the national trend.

As was the situation with cell counts, there was no national mechanism for measuring clinical case information. The International Dairy Federation

prefers clinical cases to be reported as true rates (cases per unit time at risk) as they provide accurate and repeatable measures to monitor. This requires detailed information on every cow in the herd and would have been very expensive and resource intensive to obtain at the start and end of the second phase of the project. The Countdown Downunder Mastitis Focus report that is currently under development calculates true clinical case rates and is an obvious mechanism for compiling a national clinical case measure. The extent of the achievement of the second goal was not able to be reliably measured at a national level. However a downward trend in the sale of lactating cow treatments (indicating fewer clinical case treatments) in one of the larger dairy regions between 1999 and 2003 was consistent with the cell count results.

**Table 23: Achievement of outcomes specified in the 2001-2004 Project Brief**

Target	Output	See the Fact File on...
<b>Sustainable skills and networks of farmers and their advisers</b>		
Maintain high satisfaction with the quality of training during the delivery of 35 Farmer Short Courses	89 courses held with 95% groups rating as highly satisfactory (4 or above on a scale of 0 to 5) on the last day of the course.	Countdown Downunder Farmer Short Course
Develop a 'cups on to cups off' training product and make it available to employed milkers across Australia	'Cups on to cups off' training developed. It will be widely available to milk harvesters in 2006 and supported by the service pack to enable farmers to develop farm protocols specific to their herds.	Countdown Downunder 'Cups on to cups off'
Strengthen advisory skills and networks within and between regions, involving 60% of active advisers in at least one Countdown activity each year	Bi-monthly bulletins sent to 1,863 stakeholders. 64% of advisers (764/1,200) attended a Countdown course or conference, contributed to the design of project elements and/or subscribed to Countdown-L. 398 advisers attended the 2003 Countdown Adviser Conferences at 12 regional centres.	Relevant and timely messages for the adviser network Countdown Downunder 2003 Adviser Conferences
Facilitate assessment and accreditation opportunities for farmers and advisers to have their vocational skills formally recognised by industry	A new qualification in the performance testing of milking machines available to milking machine technicians through the National Milk Harvesting Centre.	Countdown Downunder Performance testing of milking machines
Cater for advisers who wish to upskill in mastitis and milk quality by running at least one Adviser Short course each year	207 advisers across Australia attended five courses held since June 2001. (408 advisers have been to courses since they became available in early 2000.)	Countdown Downunder Adviser Short Course
Help improve synergies between major dairy projects by interacting with designers and managers of these projects for up to 10 person days per year	The project leader co-ordinated the National Learning Packages for 6 months. Countdown provided a template for farmer-adviser interactions in the Dairy Moving Forward initiative.	

## Achievement of outcomes specified in the 2001-2004 Project Brief, continued from page 67

Target	Output	See the Fact File on...
<b>Industry-wide responses to high priority udder health issues</b>		
Capture field experiences to design and promote high-quality, relevant services for dairy farmers:	Detailed report on the first phase of the project published as <i>Countdown Downunder 1999-2001 Improving mastitis control on dairy farms</i> .	
<ul style="list-style-type: none"> <li>• Publish a critical review of the first phase of the project</li> <li>• Develop tools and services that improve the effectiveness of interactions between farmers and their advisers by 15%</li> <li>• Develop a strategy for antibiotic management on farms</li> <li>• Develop a strategy to enhance control of <i>Strep uberis</i></li> <li>• Extend new technical recommendations and information to farmers at an annual conference</li> </ul>	<p>Good antibiotic management promoted in the clinical case topic of the Farmer Short Course. The Farm Guideline for choosing an appropriate dry cow treatment strategy revised to incorporate the role of teat sealants</p> <p><i>Strep uberis</i> workshop held in 2004 identified knowledge gaps and research needs.</p> <p>Countdown sessions presented at the Australian Dairy Conferences in 2002 and 2003.</p> <p>Three Dairy Awareness Days held in Queensland in 2003.</p>	
Improve herd-level mastitis diagnosis and laboratory microbiological support	An investigation pack developed to enable multi-disciplinary teams to clearly define problems and provide workable solutions and promote herd level sampling	Countdown Downunder Mastitis Investigation Pack
<ul style="list-style-type: none"> <li>• Develop and promote tools for diagnosis of mastitis</li> <li>• Negotiate in-house testing protocols for mastitis pathogens</li> <li>• Perform a needs analysis to determine the value of a proficiency testing service for mastitis pathogens</li> <li>• Develop industry-agreed protocol for testing and interpreting water quality for preparing teat disinfectant</li> </ul>	Industry agreement on water quality and teat disinfectant use was brokered through a working group and published as the revised Technote 7 (February 2003).	Countdown Downunder Technote Update Pack February 2003
Increase the capacity of Victorian dairy farmers to manage herd mastitis using new information available through milk recording services	A one page report designed to assess mastitis spread and dynamics in individual herds and software developed to the beta-version.	Countdown Downunder Mastitis Focus On-farm Data Capture project collaboration
Develop an economic model that researchers can use to prioritise development effort and advisers can use to assess long-term impact of changes in mastitis management	Custom-designed software available to researchers. The model used to estimate the economic benefits of improved mastitis management in the Australian dairy herd.	Countdown Downunder Mastitis Model
<b>High-quality, competitive dairy produce</b>		
Monitor the progress of the project and report geometric cell count statistics in a format consistent with EU requirements:	Progress toward cell count goals reported annually to AMAC (as BMCC since 2003).	National and regional cell count statistics
<ul style="list-style-type: none"> <li>• Produce, analyse and publish national and regional cell count statistics annually</li> <li>• Provide AQIS with an annual report summarising the geometric mean Herd Milk Cell Count for the national herd</li> <li>• Develop and promote a standard geometric cell count report for dairy companies consistent with the EU format</li> </ul>	<p>Geometric HMCC published in the annual Australian Dairy Herd Improvement reports</p> <p>Cell Check package (software and Technote and Countdown support) provided to dairy companies through AQIS.</p>	Cell Check
Co-ordinate the national Milk Quality Awards and publish winners each year	Milk Quality Awards run annually. Regional winners and the Top 100 featured over eight weeks in <i>The Weekly Times</i> (the sponsor) and listed on the Countdown website.	Milk Quality Awards
Assess the impact Countdown has had on adoption of best practice on farms and describe the factors driving this change	Research into how and why decisions about mastitis and milk quality were made on farms published as the <i>Insight to the dairy industry's capacity to manage mastitis</i> .	Insights from farmer progress in mastitis control
Facilitate industry-wide commitment to planning for sustainable and effective use of antibiotics in the dairy industry	Recommendations made to the Australian Dairy Industry Council in the report <i>A new approach to managing antibiotics</i> .	A new approach to managing antibiotics

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