

# DAIRY RESEARCH FOUNDATION NEWSLETTER

Volume 6 - Issue 1, APRIL 2014



INCORPORATING DAIRY NSW AND  
DAIRY CONNECT INDUSTRY MEETINGS  
[www.drfsymposium.com.au](http://www.drfsymposium.com.au)



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## DIRECTORS' UPDATE

I am very proud to announce that the installation of one of the worlds most advanced milking technologies, a robotic rotary (DeLaval AMR), has commenced at The University of Sydney's dairy farm Corstorphine.

This investment, which is independent of FutureDairy, will provide a local platform for research, teaching and training at Camden. It will therefore be the perfect complement to the on-farm research currently being developed by FutureDairy in partnership with John and Clare Cotton, farm owners from SW Victoria who are also installing a new AMR on their farm later this year. Read more on these two installations inside!



*Assoc. Prof. Yani Garcia  
Director of DRF and Dairy  
Science Group Leader*

## FROM THE PRESIDENT



*Mr Bill Inglis, DRF President*

In February this year the DRF hosted at the University's Sydney campus a meeting on the future of RD&E for the Dairy Industry in NSW. The meeting was well attended with leaders from Dairy Australia, NSW DPI, Dairy NSW, Dairy Connect, the University and DRF Council members.

While there is a need for follow-up meetings, a much clearer picture of the future of RD&E in NSW was gained. I thank all participants and take great pleasure in the role the DRF has been able to play in this crucial issue.



THE UNIVERSITY OF  
SYDNEY

# THE DAIRY RESEARCH FOUNDATION'S 2014 SYMPOSIUM

JUNE 19-20  
POKOLBIN, HUNTER VALLEY NSW

GROWTH THROUGH SCIENCE & INNOVATION

## Program & Registration Form

Hunter Valley, NSW

### EARLY BIRD

Significant discounts  
apply for registrations  
received by May 23

- June 18 Dairy NSW and Dairy Connect industry meetings,  
Sebel Kirkton Park, Pokolbin
- June 19 DRF Symposium and industry dinner,  
Sebel Kirkton Park, Pokolbin
- June 20 DRF Symposium and emerging scientists program,  
Redgrove family dairy, Singleton



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Your Levy at Work





# 2014 SYMPOSIUM

## GROWTH THROUGH SCIENCE & INNOVATION



The DRF have welcomed the opportunity to take dairy science on the road under our theme of growth through science and innovation. And, the Hunter Valley provides the perfect canvas to do exactly that.

2014 has a wonderful team of speakers, spearheaded by Dr John Penno – dairy scientist and head of successful processing company, NZ-based Synlait.

John is a dynamic speaker and he is then joined by Victorian dairy business consultant John Mulvany – who comes to NSW with a reputation for innovative business insight.

The Foundation, through its links with FutureDairy, has provided the opportunity for Symposium delegates to meet three great young people, all of whom have recently invested in robotic technology.



THE DAIRY RESEARCH FOUNDATION'S  
**2014 SYMPOSIUM**  
JUNE 19-20 POKOLBIN, HUNTER VALLEY NSW

**Register**  
**Now**

To Register please click on the link above

Dairy Research Foundation, Annual General Meeting

**Monday 5th May 2014**

University of Sydney, Camperdown Campus

# 2014 SYMPOSIUM

## GROWTH THROUGH SCIENCE & INNOVATION



This year forcing us to ‘think outside the square’ we have turned to advertising guru, and former Dubbo boy, Craig Davis.

Craig shot to fame when he spoke at the Australian Farm Institute conference and accused Australia of having ‘supermodel syndrome’ when it came to positioning itself overseas.

Craig has a fascinating portfolio of clients with whom he has worked to change attitude and create demand. His philosophies will undoubtedly have great relevance to the opportunities for creating demand for NSW dairy products.

Delegates attending this year’s Symposium are encouraged to stay on site at the beautiful Sebel Kirkton Park. This means an easy turn around for the industry dinner that evening, before heading off next morning to Singleton to meet John and Alison Redgrove and get an insight into one of the most innovative dairy businesses in the Hunter.

Their property is being used as the canvas for the popular Emerging Scientists program – where delegates will get to meet some of the country’s most promising future dairy scientists.

*We look forward to welcoming you to the  
Hunter in June*



THE DAIRY RESEARCH FOUNDATION'S  
**2014 SYMPOSIUM**  
JUNE 19-20 POKOLBIN, HUNTER VALLEY NSW

## PROGRAM

### THURSDAY JUNE 19 - DAIRY RESEARCH FOUNDATION SYMPOSIUM

#### SESSION 1 – FARMING FUTURES

The Synlait story and its secrets to sustainable growth: Synlait is soon to be NZ's biggest single-site dairy factory and can genuinely claim sustainable growth got it to that position.

**Dr John Penno**  
Managing Director,  
Synlait

Business resilience – and what it takes to grow: Gippsland dairy consultant John Mulvany has a passion for helping dairy farmers develop business resilience and his work exposes him to a wide range of business stories.

**John Mulvany**  
OnFarm Consulting  
VIC

#### SESSION 2 GROWTH THROUGH BETTER BUSINESS AND TECHNOLOGY

Taking a hard look at ourselves: The NSW Dairy Farm Monitor Project has provided the dairy industry with reliable, independent data on the profitability and productivity of 28 diverse NSW farms.

**Kerry Kempton**  
Technical Specialist-  
Dairy, NSW DPI

Our technological future: Drawing on what is now a solid understanding of the key profit drivers, there is opportunity abound to apply technology to further enhance those margins.

**Dr Cameron Clark**  
FutureDairy,  
University of Sydney

Sexed semen – the non commercial view: The push for sexed semen is providing new options for herd management both in terms of animal welfare and because the cost benefit of producing a crop of heifer calves is increasing.

**Prof Mike Holland**  
University of  
Queensland

Taking technology to new heights: Mark Billing and his wife Sam milk 450 cows on 265 hectares at Larpent, west of Colac. Mark will talk technology and share with us his greatest gains made from adopting technology.

**Mark Billing**  
Larpent, VIC

Loving Technology: Mark Neal is a technology loving dairy farmer! His clever automated gates won the innovators award at the 2013 Dairy Innovators' conference on the Sunshine Coast and are but a small example of his approach to using technology to make farming easier.

**Mark Neal**  
Oxley Island, NSW



THE DAIRY RESEARCH FOUNDATION'S  
**2014 SYMPOSIUM**  
JUNE 19-20 POKOLBIN, HUNTER VALLEY NSW

## PROGRAM

THURSDAY JUNE 19 - DAIRY RESEARCH FOUNDATION SYMPOSIUM con't.

### SESSION 3 GROWING OUR INDUSTRY THROUGH AUTOMATED MILKING SYSTEMS

Putting automation in context: Future Dairy 3 Project leader Kendra Kerrisk has overseen the uptake of robotic milking in Australia and will talk about the experience.

**Assoc. Prof.  
Kendra Kerrisk**  
FutureDairy  
Project Leader

Has Australia's first rotary AMS hit pay dirt? Nick Dornauf is the darling of the robotic dairying world having made his farm an open book for researchers and farmers interested in making the transition to robotic milking.

**Nick Dornauf**  
Deloraine, TAS

Using robots as a pathway to successful business succession: Robots have been used as the key to growth and succession planning for this 5th generation dairy farming family.

**Marcus Crowden**  
Caveside, TAS

AMS, large herds and tourists: Meanwhile, across the ditch a fabulous father/daughter combination that is using technology to convert a business whilst promoting dairy

**Frances Beeston**  
Camelot Dairy  
Mayfield, NZ

The sustainability and business test: We invite the business resilience and growth guru back to the stage to question these three technology advocates along with their mentor Kendra Kerrisk.

**John Mulvany**  
and friends

### SESSION 4 THE MARKETING SCIENCE OF GROWTH

Marketing milk without the supermodel syndrome: Former Dubbo NSW resident turned marketing guru hit headlines when he told the Australian Farm Institute that Australia had supermodel syndrome and just expected attention! Its time to knuckle down and really market brand Australian Agriculture he says.

**Craig Davis**  
BrandKarma  
Sydney, NSW

The Dairy Research Foundation Symposium Dinner (sponsored by Dairy Australia)





THE DAIRY RESEARCH FOUNDATION'S  
**2014 SYMPOSIUM**  
JUNE 19-20 POKOLBIN, HUNTER VALLEY NSW

## PROGRAM

### FRIDAY JUNE 20 - ON TOUR

#### EMERGING SCIENTIST PROGRAM (sponsored by Howard Australia)

**Welcome** from the Redgrove family: John and Allison Redgrove farm with their son Daniel and his wife Sarah on arguably some of the best dairy farming country in Australia, the Hunter River alluvial flats.

**John & Allison Redgrove**  
Singleton, NSW

**The Future of Rural Education:** Cameron Archer is a visionary who has devoted his life to agricultural education and training, and has influenced how students learn from primary school to university.

**Dr Cameron Archer**  
Principal of Tocal  
Agricultural College

#### The Rowenvale Dairy Farm tour, incorporating the Emerging Dairy Scientists' Program:

**Feeding Systems:** Dairy consultant Neil Moss facilitates this platform and talks us through the feeding system at Rowenvale with our host John Redgrove, with a particular focus on the integration of the corn crop.

**Dairy Health:** The Redgrove family's vet, Dr Stewart Scott from Muswellbrook facilitates this session and introduces Sarah Redgrove who heads up the family business's calf rearing program.

**A focus on reproduction:** Future Dairy's Kendra Kerrisk facilitates this platform that kicks off with Daniel Redgrove talking about how the integration of Moo Monitors have brought about a quantum leap in farm efficiency.

#### Announcement of the Emerging Scientist for 2014 and close



## FUTUREDAIRY ANNOUNCES PARTNER FARM



Retreat Creek – the farm owned by western Victorian dairy farmers, John and Clare Cotton – will become a partner farm for the FutureDairy project when the family installs Australia's second robotic rotary automatic milking system (AMS).

The robotic rotary was developed for the automatic milking of larger, grazing herds by dairy equipment company DeLaval in collaboration with the FutureDairy team.

The Cottons who currently milk in a 50 unit rotary dairy, expect to be milking in their robotic rotary towards the end of this year or early next year.

Once they have adapted their farming system to automatic milking, they plan to expand the year-round calving herd from the current 550 cows to 600-800 cows. As a partner farm, the Cottons will co-operate with the FutureDairy team to monitor the system performance, especially when the technology is operating towards its technical capacity (600-800 cows).

The research partnership has been generated to enable FutureDairy to conduct research within a commercial farm setting, so that specific findings are applicable to a large scale pasture-based operation with cows milking themselves voluntarily.



*Members of the FutureDairy Steering Committee visited Retreat Creek prior to their recent meeting.*



## FUTUREDAIRY ANNOUNCES PARTNER FARM cont.



FutureDairy project leader, Associate Professor Kendra Kerrisk, said that the robotic rotary had been proven under commercial conditions at Gala Farm in Tasmania but the ability of the system to perform with larger herds – up to 800 cows – remained uncharted territory.

“The robotic technology for milking cows is well proven. But its success in grazing herds depends very much on adapting farm management practices to encourage cows to move on their own from the paddock to the dairy and around the farm,” Assoc Prof Kerrisk said.

The FutureDairy team has developed management guidelines for AMS based on research and experience with commercial farmers using AMS box units.

“Our work with the Cottons, and also our experiences with the Dornaufs at Gala Farm will enable us to develop guidelines for achieving the optimum performance from the robotic rotary under Australian conditions.”

The Cottons were selected as FutureDairy’s robotic partner farm through a process which saw 30 applicants respond to an invitation to express interest.

*FD Steering Group members Mark Billing, Steve Coats, Shirley Harlock (Chair) and Danielle Auldist at the Cotton's farm in Retreat Creek*



## FUTUREDAIRY ANNOUNCES PARTNER FARM cont.



*Clare and John Cotton*



“When we visited the six short-listed farms we were extremely inspired by the farmers and their businesses,” she said.

“We are delighted to be working with the Cottons. The family has a history of trying new things and being involved in industry initiatives.”

Retreat Creek is very well suited to the robotic rotary and an expanded herd size of 600-800 cows. The existing infrastructure – such as the feed pad, laneways and farm layout can be easily adapted for voluntary cow movement around the farm.

Once operating smoothly, the Cottons will host field days and other scheduled visits to share their experiences. The FutureDairy team will report on findings to industry. Retreat Creek will be closed to the public during the construction and adjustment period.

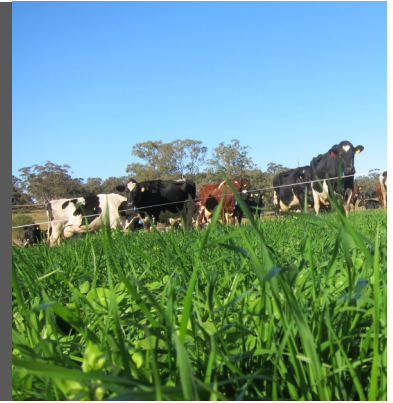
FutureDairy’s major sponsors for the research partnership with Retreat Creek are Dairy Australia, DeLaval and the University of Sydney.



*For more information, contact Associate Professor Kendra Kerrisk, FutureDairy Project Leader ph. 0428 101 372, email [kendra.kerrisk@sydney.edu.au](mailto:kendra.kerrisk@sydney.edu.au) or [www.futuredairy.com.au](http://www.futuredairy.com.au)*

# INCREASING MATURITY INCREASES YIELD OF MAIZE SILAGE WITHOUT AFFECTING NUTRITIVE VALUE

DR RAFIQ ISLAM



Stage of maturity and plant density are major factors affecting both yield and nutritive value of whole-plant maize silage. A study was conducted to investigate the effect of maize maturity and plant density on yield and nutritive value of maize silage.

A hybrid forage maize (Pioneer 2307) was grown at Camden with two plant densities (High, 74,000 plants/ha; and Low, 66,000 plants/ha) and harvested at three different stages of maturity (31, 38 and 45% dry matter [DM]).

After harvesting at ~20 cm above ground level, maize plants were chopped immediately to a particle length of 2.5 cm and ensiled in micro-silos. Silage samples were analysed for chemical composition and nutritive value following *in vitro* digestibility technique.

Increasing plant maturity from 31% to 45% DM increased whole plant weight from 136 to 172 g DM/plant and stem weight from 54 to 83 g DM/plant, respectively. As a result increasing maturity from 31% to 45% DM increased DM yield from 20.9 to 26.3 t/ha (Fig 1).

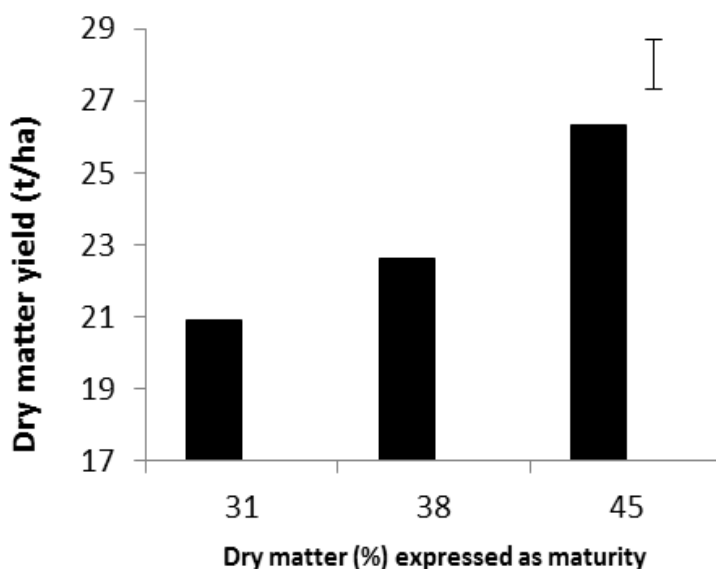
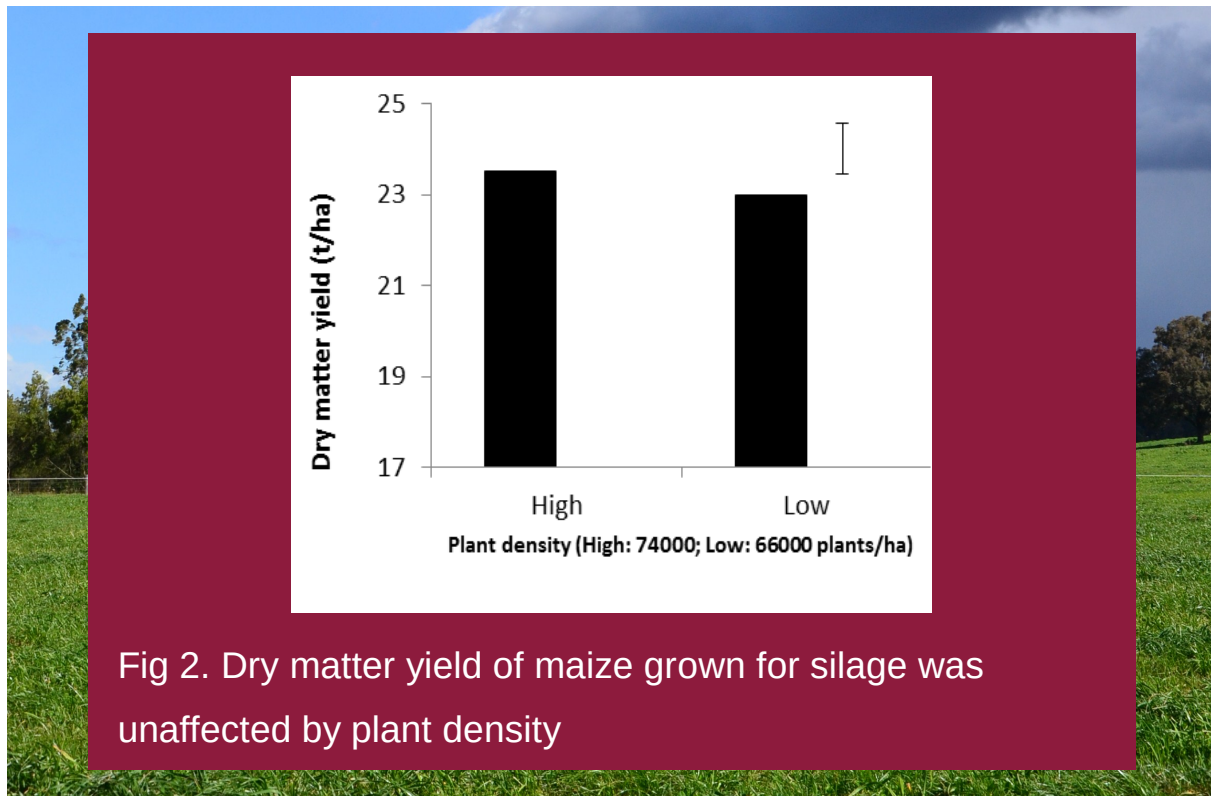


Figure 1. Increasing maturity increased dry matter yield of maize grown for silage



## INCREASING MATURITY INCREASES YIELD OF MAIZE SILAGE WITHOUT AFFECTING NUTRITIVE VALUE cont.

However, increasing density from Low to High did not increase DM yield (Fig 2) as the greater number of grain kernels/plant and heavier kernels in Low compensated for the weight of the additional number of plants/ha in High.



Increasing maturity was associated with greater starch concentration from 25.3 to 36.5% but did not affect CP, fibre function and ME concentration of maize silage (Table 1).

**Table 1. Impact of maturity on nutritive value of maize silage**

Chemical composition (% DM or as stated)	Dry matter % (or maturity stage)		
	31	38	45
Ash	5.8	5.9	4.8
Crude protein	6.3	6.0	5.9
Acid detergent fibre	24	22	21
Neutral detergent fibre	43	41	39
Lignin	2.4	2.8	3.1
Water soluble carbohydrate	1.2	1.2	1.6
Starch	25	32	37
<i>In vitro</i> DM digestibility (g/kg)	69.1	67.8	68.5
Metabolisable energy (MJ/kg DM)	10.2	10.0	10.1



## INCREASING MATURITY INCREASES YIELD OF MAIZE SILAGE WITHOUT AFFECTING NUTRITIVE VALUE cont.

However, increasing density had no effect on starch but increased fibers and decreased CP from 6.3 to 5.9%. As a result increasing density decreased ME from 10.4 to 9.8 MJ/kg DM (Table 2).

Increasing maturity was associated with greater starch concentration from 25.3 to 36.5% but did not affect CP, fibre function and ME concentration of maize silage (Table 1).

Table 2. Impact of plant density on nutritive value of maize silage

Chemical composition (% DM or as stated)	Plant density	
	High	Low
Ash	5.4	5.6
Crude protein	5.9	6.3
Acid detergent fibre	24	21
Neutral detergent fibre	43	38
Lignin	2.8	2.8
Water soluble carbohydrate	1.2	1.4
Starch	30	32
<i>In vitro</i> DM digestibility (g/kg)	66.8	70.1
Metabolisable energy (MJ/kg DM)	9.8	10.4

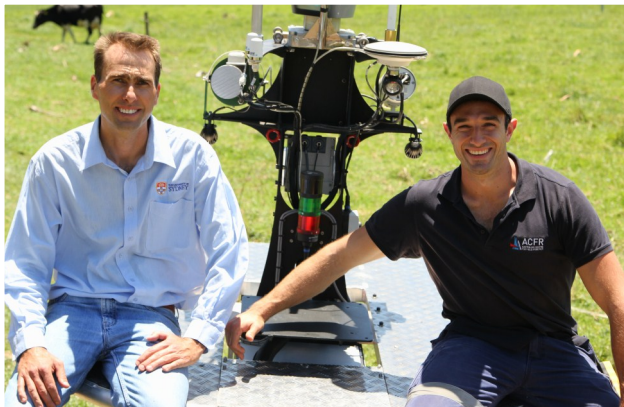
*High: 74,000 plants/ha; Low: 66,000 plants/ha*

These results have made us re-think the actual time of harvest, as drier plants increased yield and starch.

Please contact Dr Rafiq Islam at [md.islam@sydney.edu.au](mailto:md.islam@sydney.edu.au) for further information.



# DISCOVERY CHANNEL IN CAMDEN



Cameron Clark (left in photo) alongside Mark Calleija (right in photo) from the School of Engineering were recently interviewed by Discovery Channel.

Discovery Channel came to Camden to see the ground breaking research being conducted by the Dairy Science Group, particularly the use of unmanned ground vehicles in dairy systems and their ability to reduce repetitive tasks and the risk of injury.

The Dairy Science Group will soon be receiving an unmanned ground vehicle suited to farm terrain sponsored by the Faculty of Veterinary Science, the Dairy Research Foundation, Australian Centre for Field Robotics and the Livestock Veterinary Teaching and Research Unit.

The vehicle (pictured right) will be the platform for further research on the reduction of repetitive tasks on dairy farms and the provision of new real-time information to increase the productivity of both automatic milking and conventional dairy systems.

Those keen to see the story can follow the following link:

<http://www.ctvnews.ca/video?playlistId=1.1672142>

For further information please contact Cameron Clark on 0477324206 or at [Cameron.clark@sydney.edu.au](mailto:Cameron.clark@sydney.edu.au)





# PASTURE ALLOCATION COULD BE THE KEY TO MILKING MORE COWS WITH ROBOTS

Clever pasture allocation strategies could increase the capacity of milking robots in Australia's grazing based systems, according to recent research conducted by FutureDairy postgraduate student, Alex John.

His findings suggest some farmers may be able to milk an extra 10 cows per robot by changing the amount of feed offered in the early evening.



In Australia's grazing based systems, the capacity of milking robots depends largely on milk production levels and the number of times cows are milked each day. FutureDairy project leader Associate Professor Kendra Kerrisk said a key to getting the most out of capital investment in milking robots was to minimise the amount of time the robots are idle.

"High robot utilisation is achieved when milkings are relatively evenly distributed throughout the 24 hours of a day," Assoc Prof Kerrisk said.

Most of Australia's grazing based automatic milking systems (AMS) operate with voluntary cow movement: the cows move by themselves from the paddock to the dairy and around the farm. Grazing cows tend to be less active after midnight, so robots are often idle during the early hours of the morning.

## PASTURE ALLOCATION COULD BE THE KEY TO MILKING MORE COWS WITH ROBOTS cont.

“Voluntary cow movement has a strong influence on robot utilisation. We want to encourage cows to leave their paddock regularly throughout the day and night so that they have the opportunity to be milked.”

“Feed is the primary motivator used to encourage voluntary cow movement and this is why pasture allocation is critical.

“We know that better cow movement is achieved by offering cows three allocations of pasture a day rather than two which is typical of a conventional milking system.”

Mr John studied two commercial dairy farms with consistently good voluntary cow movement.

“On most AMS farms, cows receive about the same amount of feed at each allocation but both of these farmers offered less during the evening.”

“One of the farms achieved more evenly distributed milkings, which meant better robot utilisation and less time spent fetching cows.

In addition to the labour saved in fetching cows, Mr John said the results suggest that this system may enable AMS farmers to milk more cows per robot, achieving a better return on investment in milking equipment.

While further research is needed to develop practical recommendations, this study is the first evidence of being able to achieve an evenly distributed milking pattern over a 24-hour period with a reduced need for fetching in a commercial, pasture-based automatic milking system.



*For more information contact  
FutureDairy: Associate Professor  
Kendra Kerrisk 0428 101 372 or  
[kendra.kerrisk@sydney.edu.au](mailto:kendra.kerrisk@sydney.edu.au).*



# POST GRADUATE UPDATES

## NEW STUDENTS

*This past 12 months has seen 3 students complete their post-grad studies with another 2 due to submit mid year.*

*We now have a wave of new students starting new research projects and we are very keen to see what plans they have come up with.*

*We have introductions from Beth Scott, Alex John and Ashleigh Wildridge in this edition so please have a read of their research plans.*

### **BETH SCOTT** *Honours Student*



Beth is new to the Dairy Science Group and is doing her Honours on *'The impact of milking order on the quality and quantity of pasture accessed, levels of rumination and milk production'*.

A typical milking session in conventional milking system (CMS) will last for 2-3 hours, depending on the number of cows milked, throughput rate and equipment used. The approximate time from the first to the last cow entering an allocation of pasture will be 2-3 hours.

There is very little work on the depletion of, access to, and nutritive value of pasture for dairy farms from the time that the first cows arrive until the cows are collected for the next milking.

Data from Argentina and Australia suggest that pasture allowance to ground level is depleted by 40% during the time that the herd has access to a given pasture allocation (regardless of the milking system).

The objectives of this study are to determine the repeatability of milking order and association between milking order, milk yield and milk components for cows of differing ages and days in milk (DIM; the number of days since calving in the same lactation) and determine the nutritive value of pasture as pasture is depleted whilst cows continue to enter the paddock after milking.



## HELEN GOLDER *PhD Student*

I am happy to announce I submitted by my thesis entitled 'Increased Understandings of Ruminal Acidosis in Dairy Cattle' in December 2013.

I am now currently working in dairy research at SBScibus, based in Camden, NSW with Adj. Prof Ian Lean and Dr Neil Moss.



My new role covers research in a range of dairy fields; however, I will continue to have a focus on nutrition, ruminal acidosis and rumen bacteria.

A chapter of my thesis was published in the February edition of The Journal of Dairy Science.

I am also to present this work at the Australian Association of Ruminant Nutrition workshop on March 18<sup>th</sup> in Melbourne.



### THESIS SUMMARY

The aim of my thesis was to increase the understandings of the pathogenesis of ruminal acidosis and control strategies for ruminal acidosis in dairy cattle.

This was achieved through the investigation of the role of substrates in rumen perturbation and evaluation of feeding strategies and potential feed additive control agents in 4 short or longer term challenge studies.

The hypothesis, which was supported, was that starch-, sugar-, and protein- or amino acid-based feed substrates would produce different ruminal and blood measures and distinct ruminal bacterial community composition associated with different risks of ruminal acidosis.

## THESIS SUMMARY cont.

Secondly, that partial mixed ration feeding strategies and feed additive control agents would promote favourable ruminal conditions and reduce the risk of ruminal acidosis, which was also supported; however, whether feed additive control agents reduced the risk of ruminal acidosis was equivocal.

This work has increased the understandings of the pathogenesis of ruminal acidosis and identified feed management practices that produce rumen responses that are favourable to reducing the risk of ruminal acidosis.

The findings of this thesis also have relevance to other production industries, such as beef and sheep.

## ALEX JOHN *PhD Student*

Hello! My name is Alex and I have just joined the Dairy Research Group to commence my PhD studies.

I recently completed a Bachelor of Agricultural Science (Hons) at the University of Tasmania with my honours project looking at *Pasture Allocation in Two High Performing Automatic Milking Systems*.

Having worked last year with the team at Future Dairy, in collaboration with the Tasmanian Institute of Agriculture (TIA) Dairy Centre, to complete my honours project; I am excited to once again be back at Camden to continue my studies this year.

My PhD project will be continuing on a similar theme to my honours project, further investigating '*Feed management and incentive systems to optimise robot utilisation and maintain cow performance in pasture based automatic milking systems*'.

I will be working with Cameron Clark, Kendra Kerrisk and Yani Garcia on this project.



ALEX JOHN cont.

There is relatively little known about the effects of manipulating feed allocation duration and quantity on subsequent cow behaviour.

By conducting trials that test different feed allocation regimes, it will be possible to develop sound recommendations that will be applicable to industry as to the best management practices for pasture management in AMS.

This work will have potential management implications for both current and future AMS farmers and will hopefully help to build increased confidence, adoption and investment of this technology in the industry.

I look forward to sharing more with you on my project in the coming years.



## SARANIKA TALUKDER *PhD Student*

### Rumination profile of left displacement of abomasum (LDA): A case report

In our recent trial on November 2013, thirty cows were fitted with an accelerometer (Heattime; SCR, Israel) attached to a neck collar.

The accelerometer system continuously monitored individual cow activity and rumination and reported these for 2-h intervals.

A decreasing trend of daily rumination and activity change in a cow later diagnosed to have a LDA was observed five days before clinical detection (25/11/2013) followed by an upward trend during the postoperative period (Figure 1 on next page).

In our recent trial on November 2013, thirty cows were fitted with an accelerometer (Heattime; SCR, Israel) attached to a neck collar.

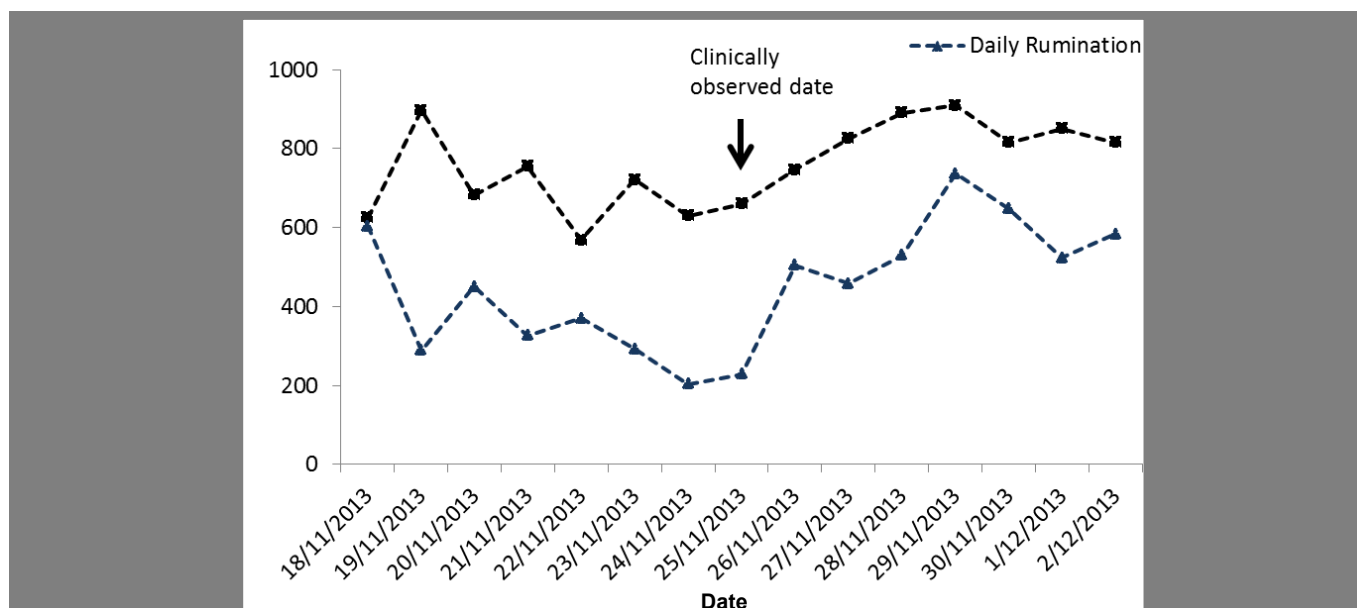
The accelerometer system continuously monitored individual cow activity and rumination and reported these for 2-h intervals.

Early detection of an LDA (if followed by prompt intervention) may result in improvements in animal welfare and recovery speed.



## Rumination profile of left displacement of abomasum (LDA) : A case report cont.

Details of this case study will be presented at the Dairy Research Foundation Symposium in June 2014.



*Figure 1: Daily rumination and activity profiles in LDA cow one week before and after clinically observed date of LDA.*

I have also been busy working on a number of other data sets.

The first is from a study into whether a forage crop, provided at pasture, could be used as an incentive to encourage cows to both return from their 'previous' pasture allocation as well as traffic through the dairy.

The second data set is focussed on determining whether there are any traits or factors that are common between cows that generally traffic "well" or "poorly" at the dairy.

And the third data set combined the use of a feed incentive offered at milking with the use of a priority laneway within the pre-milking yard in order to better understand cow traffic and voluntary waiting times for cows that had not experienced feed at milking.

I hope to be able to present you with some new and exciting results in the next issue of this newsletter!

Finally, I am really excited to say that I am almost at the end of my candidature. I have thoroughly enjoyed my experiences and hope to be able to submit my thesis around the middle of this year. As student life draws to an end I begin to look forward to the opportunities that the future holds for me!

*Saranika is about to relocate to Wagga Wagga to finish writing up her thesis and plan for the impending birth of her first child. Congratulations Saranika!*

## TORI SCOTT *PhD Student*



I am very pleased to write that my first piece of research (an investigation into the use of feed at milking to encourage voluntary cow traffic in the pre-milking yard of an AMS) was published in the March issue of the Journal of Dairy Science.

I am also submitting my second piece of research, which involved studying the impact of using supplementary feed as an incentive for encouraging voluntary cow traffic in the pre-milking yard, to the same journal.

This particular piece of research combined cow traffic with aspects of cow behaviour in the pre-milking yard in order to better understand what cows are doing while voluntarily waiting to be milked.

It demonstrated how voluntary waiting time (the time a cow spends voluntarily within the pre-milking yard – i.e. she is freely able to present for milking) can be reduced by an average of 21% (approx. 16 min) when cows were offered feed following milking.

During the trial it was also observed that cows granted access to supplementary feed after milking had a greater probability of being located closer to the robotic unit, facing the robotic unit, and were less likely to be observed lying down.

These behavioural differences could explain why cows fed after

milking spent less time in the pre-milking yard and could be indicative of cows with a greater motivation to exit the pre-milking yard (and access the feed on offer after exiting the yard via milking).

*The pre-milking yard at the AMS dairy on EMAI*

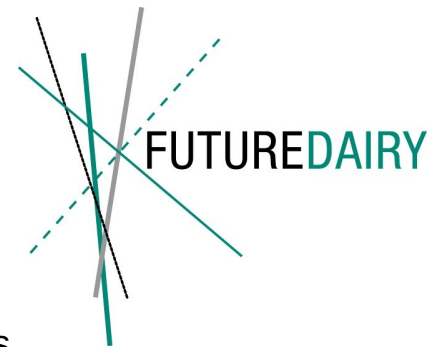


*The Dairy Science Team would like to extend to Tori their very best wishes for her upcoming wedding. Hope you have a great day!*



## ASHLEIGH WILDRIDGE *PhD Student*

My PhD research will be working on finding out the production and behavioural implications of the type and timing of feed allocations to dairy cattle in an automatic milking system (AMS).



Typically, Australian dairy farmers maintain their herds on pasture. The introduction of the AMS has enabled these farmers to reduce the labour commitments of milking the cattle, providing more time for other farm activities.

The average pasture based AMS farm works off three specific pasture allocations for the milking herd per day to encourage cattle to voluntarily travel to the dairy to be milked and gain access to fresh pasture.

The production and flow of cows going through the dairy can be affected by changes in feed availability and time of day.

Where flexibility exists, I will be researching if the provision of a total mixed ration (TMR) on a feed pad at a strategic time during the day or night can improve the frequency of milking events during the early morning when AMS utilisation is usually low.



Our Dairy Science Students will be amongst those presenting at the 2014 DRF Symposium in the Hunter Valley on June 19 & 20

**Register Now** to have the opportunity of hearing Australia's emerging scientists in dairy research



# DAIRY SCIENCE GROUP STUDENTS AWARDED 1st & 2nd AT AUSTRALIAN DAIRY CONFERENCE

Six of Australia's best young scientists competed recently for the **2014 Feed Central Young Dairy Scientists' Communication Award** at the Australian Dairy Conference in Victoria.

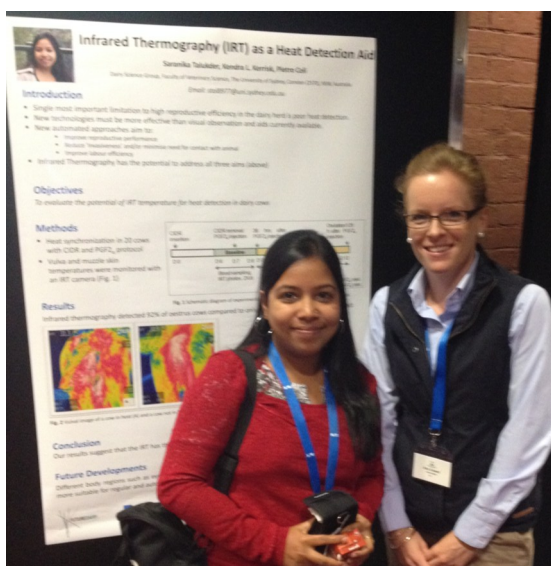
The award is designed to progress the careers of dairy scientists by nurturing quality scientist-to-farmer interaction.

**First Place** was awarded to **Helen Golder** and the competition **Runner Up** was **Saranika Talukder** from the University of Sydney's Dairy Science Group.

Finalists were selected on the strength of their scientific proficiency via a submitted abstract, and the competition involved preparing an article for the Australian Dairy Farmer magazine; preparing and discussing a poster; and preparing and delivering a five minute talk to an audience of more than 400 dairy farmers at the conference.



*Helen (above) and Saranika (below left) are pictured with Feed Central Staff Kim Colwell and Ross Read.*



Helen's research on understanding and controlling acidosis has the potential to impact largely on both the dairy and beef industries.

She feels that the award recognition 'gives her research meaning'.

In continuing her research with SBScibus, Helen hopes to eventually develop an online diagnostic tool for acidosis.

*This is an outstanding effort from Helen and Saranika. Congratulations to you both from the Dairy Science team!*

# CAMDEN FARMS

Since the last newsletter, Camden Farms has been given the news that a new 24 bail AMR Facility is to be built at Corstorphine during 2014.

After a lengthy process to get to this stage, construction has started this week and we are hoping to be milking cows by the second week of July. This means a lot of exciting challenges lay ahead for the staff at Corstorphine.



Having just returned from a trip to Tasmania to look at the AMR on Gala Farm in Deloraine, I am now getting my head around the robotic system.

The trip was a fantastic opportunity and a real eye opener for me and has managed to answer a lot of the questions I've had looming in the back of my mind.

Back on the farms, a bumper crop of corn was recently harvested and the recent rains have enabled us to do a lot of autumn planting and a couple of recent trials have been held in the Corstorphine paddocks.

All going well in the next few months, I anticipate having a lot to update in the next edition of the Newsletter.....*Kim McKean*



*For further information please contact Farms Manager Kim McKean at  
[kim.mckean@sydney.edu.au](mailto:kim.mckean@sydney.edu.au)*



# VISITORS TO CAMDEN

## Rafiuddin

After completing his BSc (Hons) in Animal Husbandry in 2002, Rafiuddin worked with the Department of Livestock Production in Baluchistan, Pakistan as a Veterinary Officer.

Rafi completed his Masters whilst with them in 2007 and is now in

the middle of his PhD with the University of Veterinary and Animal Science, Lahore, Pakistan.

His PhD research topic is the 'Study of factors affecting quality of silage as a component of total mixed ration on growth and production performance in Dairy Animals (Nili-Rave Buffaloes)'

Rafi has joined Sydney University for a 6 month period of research with the 'Dairy Science Group' in Camden.

His work will be on the 'Impact of Maturity and Plant Density on Yield and Nutritive Value of Maize Forage' and is being done under the supervision of Assoc. Prof. Yani

Garcia and Dr. Rafiq Islam.

## Marta Fanzago

Marta is also spending time in on the Camden Campus as part of her PhD studies. She graduated in Animal Science in Italy in 2008 and has worked on European project 'Wellgene, Animal welfare and product quality - Welfare condition and semen production of Simmental Bulls' from 2005 to 2007.

From 2008 to 2011 Marta worked in a veterinary clinic until deciding in 2012 to start her doctoral course with the PhD school in Biotechnology at the University of Udine.

Part of her project research is to spend 3 months with the University of Sydney to analyze the topic of oxidative stress in Dairy cows. She is working with Pietro Celi within the Dairy Science Group in Camden.



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## MOST RECENT SCIENTIFIC PAPERS

### *ACCEPTED AND IN PRESS*

Clark, C.E.F., Horadagoda, A., Kerrisk, K.L., Scott, V., Islam, M.R., Kaur, R., Garcia, S.C (2014). Grazing Soybean to Increase Voluntary Cow Traffic in a Pasture-Based Automatic Milking System. *Asian-Aust. J. Anim. Sci.* 27 (3) 422 -430.

Clark, C.E.F., Kwinten1, N.B.P., van Gastel, D.A.J.M, Kerrisk, K.L., Lyons, N.A., Garcia, S.C. (2014). Differences in Voluntary Cow Traffic between Holstein and Illawarra Breeds of Dairy Cattle in a Pasture-based Automatic Milking System. *Asian-Aust. J. Anim. Sci.* 27 (4) 587-591.

Lyons, N. A., Kerrisk, K. L. and Garcia, S. C. (2014). Milking frequency management in pasture-based automatic milking systems: A review. *Livestock Science*, 159, 102-116.

Scott, V., Thomson, P.C., Kerrisk, K.L., Garcia. S.C. (2014) Influence of provision of concentrate at milking on voluntary cow traffic in a pasture-17 based Automatic Milking System. *Journal of Dairy Science*, [www.journalofdairyscience.org/article/S0022-0302\(14\)00039-3](http://www.journalofdairyscience.org/article/S0022-0302(14)00039-3).

Talukder, S., Kerrisk, K. L., Ingenhoff, L., Thomson, P.C., Garcia, S. C., Celi, P. (2014). Infrared technology for estrus detection and as a predictor of time of ovulation in dairy cows in a pasture based system (Accepted in *Theriogenology*).

Talukder, S., Celi, P., Kerrisk, K., Garcia, S. C., Dhand, N. (2014) Factors affecting reproductive performance of dairy cows in a pasture-based, automatic milking system research farm: a retrospective single cohort study. *Animal Production Science*. (Online - <http://www.publish.csiro.au/paper/AN13010>)

Golder, H.M., Celi, P., Rabiee, A., Lean, I.J. (2014). Ruminal acidosis in 21-month-old Holstein heifer. *Canadian Veterinary Journal*, In Press.

Garcia SC, MR Islam, CEF Clark and P Martin (2014). Kikuyu based pastures for dairy production: a review. *Crop & Pasture Science* , In Press.

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