

## **Dairy Research Foundation**

Newsletter, Volume 8 - Issue 2 September 2016



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FACULTY OF VETERINARY SCIENCE

### **Dairy Research Foundation**

For more information on any of our articles or to become a member please contact

T +61 2 4655 0631

F +61 2 4655 2374

E <u>vetdrf©sydney.edu.au</u>



The Dairy Research Foundation welcomes feedback on its Facebook page. Please click the FB icon to the left to contribute!



## **Directors Report**

Welcome to this edition of the DRF Newsletter.

In spite of the difficult situation that the industry, and farmers in particular, are going through, the 2016 Dairy Symposium was another success.

We were delighted to have Bega Farmer and former Dairy Australia Chair Max Roberts as the recipient of the Dairy Science Award.

This year we are also organising the 2016 Australasian Dairy Science Symposium at Sydney University in November.

Read more inside about both symposiums as well as our usual technical and post grad students updates.

Regards, Yani

The 2016 Symposium, held at Wagga Wagga was again a great success.

Particularly pleasing to me were the farmers meetings held on the Wednesday. This was an opportunity to explain the Industry Strategy that the DRF has been central to.

There was also a clear feeling that industry unity is paramount and that all sectors of the NSW Dairy industry need to work together and to be able to speak with one voice.

We all need to continue to work together to make this happen.

## From the President



## Australasian Dairy Science Symposium -ADSS2016

### 16th - 18th November 2016, University of Sydney, Camperdown

The BIGGEST Scientific Dairy Event in the Southern Hemisphere will be held at The University of Sydney, Camperdown, NSW, Australia from 16-18 November 2016.

The program will focus on topics of current interest including:

- Welfare
- Intensification/value adding
- Cows, plants and interactions
- Labour management and farm economics
- Feed production and feeding systems
- Soils, nutrients & environment

## • Physiology, genetics, nutrition, reproduce and health

• Technology/data

• Role of science in the dairying future



ADSS2016 Chair, Professor Yani Garcia

### **Featured Speakers**

• Prof. Daniel Weary (University of British Columbia, Canada), speaking on Animal Welfare.

• Drs Pieter Raedts and Richard Rawnsley (TIA/UTA, Tas, Aus), speaking on Intensification/Value Adding.

• Dr Pablo Gregorini (DairyNZ, NZ), speaking on cows-plants & interactions. • Dr Bill Wales (DEJTR, Ellinbank Vic, Aus), speaking on Feed Production & Feeding Systems.

• Dr Richard McDowell (AgRes, NZ), speaking on Soils Nutrients & Environment.

• Prof Rupert Bruckmaier (University of Bern, Switzerland), speaking on Physiology, Nutrition & Health.

• Many more speakers to be announced shortly.

### Registration and Accommodation -Bookings Now Open

Registration is available online

Register before 14 September 2016 for earlybird savings.

### **Registration Rates**

Registration Type	Fee incl. GST
Early Registration	\$760.00
Standard Registration	\$860.00
On-site Registration	\$960.00
Student Registration	\$300.00

Enjoy discounted Symposium accommodation rates at the Rydges Hotel by booking accommodation with your registration.

## Sponsorship and Exhibition Opportunities

Sponsors and exhibitors have the unique opportunity to network and promote themselves to a specialised audience of 200 influential dairy industry representatives, including researchers, academics, institutions and organisations, and the farming community.

We welcome support to all who share our passion for producing the most completely natural food and milk, from safe and healthy animals in efficient, healthy dairy systems.

For bookings and enquiries, please contact our Sponsorship and Exhibitions Account Manager on +61 2 9265 0700 or email <u>sponsorship@arinex.com.au</u>

### Contact the ADSS2016 Symposium Managers

For any further enquiries please email <u>adss2016@arinex.com.au</u>

We look forward to welcoming you to ADSS2016 in November!



## Max Roberts awarded for services to dairy

Reflecting on a distinguished career in the dairy industry, former chairman of Dairy Australia and Bega Valley farmer Max Roberts said there was always a golden rule.

"It's easy to tell the good news but you must also be able to tell the bad news."

He also joked that interstate flights often required for such roles were a good opportunity "to get the dirt out from under your fingernails".

Max was recognised with the Dairy Science Award for his service to the industry at the Dairy Research Symposium Dinner at Wagga Wagga RSL.

A strong advocate for dairy research and development throughout his career, he served in leadership roles for several industry organisations including heading up the dairy farmer lobby group in NSW and

vice president of the National Dairy Representative Organisation. He has represented the Australian dairy industry both nationally and internationally and remains a director on the Bega board.

"I do appreciate and I'm quite flattered by the award," Max said on receiving acknowledgment at the event he had himself emceed many times.

"But I think what we should always remember I'm only an individual and generally acted for an organisation and to me that award really is an indication of the success of the organisations that I've been part of."

He said his years with Dairy Australia were some of the most formative of his life. "When you are given the opportunity to walk around the halls in Washington to promote a free trade agreement, or sit back and across the table with half the Chinese dairy industry, trying to get a better deal and speaking through interpreters even though you know full well they can understand every word you can say in English, or represent the industry in Japan those are the sorts of experiences that you really do not get unless you are in these positions."



Max Roberts and his wife Sue

Max also paid tribute to his to his wife Sue who often held the fort on the farm while he was away.

"Her support has been absolutely essential and again I think it's recognition, this award, of Sue's involvement in my life and my career."

He also thanked the sector that had made his career so fulfilling.

"I'd like to thank the dairy industry for what has been a great life."

He urged others to take advantage

of the opportunities to serve the sector.

"If there's one message that I'd like to put across is to encourage dairy farmers, male or female, young or old, to have a go at these roles.

"I think too often people sit back and think 'no, that's too hard. Or, how do I get into that?'

"Give it a go," he urged. "See what you can become involved in, at a local level and work through."

Photo and story courtesy of Dairy News Australia.

## 2016 Symposium

Hope everyone who attended the recent Symposium enjoyed themselves and left with many take home messages.

The turnout was fabulous given industry circumstances and the DRF would like to thank all of you who attended and especially our wonderful Sponsors for your ongoing support!

We had an amazing array of speakers with Russ Hovey (right), who is an Aussie expatriate who works at UC Davis, headlining Symposium Day.

Russ then went on to mesmerize everyone on Farm Day with his investigative journey into a dairy cows udder!

Andrew Parkes from Customised Farm Management and David O'Donnell from SE Local Land Services set up the theme of getting 'More from Less' with their experiences of surviving drought and moisture monitoring programs being implemented.

Russ Hovey from UC Davis showed the audience around a cows udder on Farm day



Skeeta Verhey, a dairy farmer from Nth. Victoria continued with advice on making farm decisions that equate to informed business decisions.

Symposium day continued into the afternoon with the University's Greg Cronin. Although Greg's interests lie predominantly with poultry he captured our audience with the work he's been doing in the areas of animal behaviour and welfare.

Stewart Scott, a vet from the Hunter Valley with a focus on providing preventative strategies. His use of herd recording data to generate early indicators of issues has been important in helping farmers develop an understanding of their own transition cow management.

Paul Hemsworth followed Stewart with a presentation on the impact of intensifying livestock production on cow behaviour and welfare. Paul has research into farm, zoo and companion animals and a wealth of knowledge that he shared with the audience.

The last session of the day focused on the application of technology on a dairy farm. Cameron Clark from Sydney University took us on a journey through the future farming system and whilst Bev and Garry Carpenter talked about their investment in robots as a part of their retirement plans.

Dairy Consultant Chris Hibburt's work in the Stepping Up and Stepping Back program set the tone for his presentation.



Emerging Scientist Runner Up Stephanie Bullen (UniMelb)



Emerging Scientist Joanna Newtown (DEDJTR Vic) presents on Farm Day



Emerging Scientist Alex John presents with the help of Rachael Rodney and Lucy Watt

Chris inspired both employers and employees on farms to set goals and take a hold of their own future!

Russ Hovey once again captivated the audience with an outline of the undergrad dairy science program he runs at UC Davis, and the importance of educating the younger generation on the honour of being involved in our industry.

A huge day was followed by a little time to relax and network at the Symposium dinner. Congratulations to Max Roberts on being awarded the 2016 Dairy Science Award at the event.

Most would know Max by his many connections within the dairy industry but he has also MC'd the DRF Symposium Dinner on many occasions and it was lovely to see him being presented the award instead.

Chair of the Symposium Committee Kendra Kerrisk took over the role of MC and with pretty big shoes to fill did a fabulous job!

Many thanks to Glenn and Andrea Jolliffe for their wonderful hospitality in hosting the symposium group on Farm Day. What a beautiful and amazing farm the Jolliffe's have established over the years!

This was the backdrop for our Emerging Scientists who were once again a highlight with 9 students presenting snapshots of their work to the audience.

This was done in a competition format with the major prizes were taken out by Alex John and Rachael Rodney (a bit of a coup for the University of Sydney). The Runner up was Stephanie Bullen (University of Melbourne).

Overall the whole conference was a great success and we got to visit a very beautiful part of the country. CSU in Wagga Wagga is a lovely welcoming Campus and we thank them kindly for their participation in the event.

Our conference coordinator Tara Wolfson of EJM Events did an outstanding job in pulling the event together and the DRF team would like to thank her immensely.

<u>Click here</u> to see a copy of the 2016 Proceedings.



#### **Current Topics in Dairy Production**

Volume 21 June 16 and 17, 2016



The Dairy Research Foundation 2016 Symposium Hunting Efficiency from the Inside Out Wagga Wagga NSW

## Evaluation of an activity and rumination monitor in dairy cattle grazing two types of forages

### By Juan Molfino

The ability to measure and quantify the different behaviour activities of grazing cattle is key for the development of advanced management practices such as individualised supplementation or to predict the day of calving for cows. However, available systems are constrained by either the type and/or number of behaviours that can measured or because they are less suitable for a practical use.

We conducted a field study to test the accuracy of a newer version of an activity and rumination collar-based monitoring system (SCR HR-LDn) by comparing the electronic data against independent data collected through direct visual observations, for 3 different types of behaviour: grazing, ruminating and low activity for cows grazing either annual rye grass or chicorybased swards.

Eight non lactating dairy cows were fitted with the rumination and activity monitoring tag (SCR HR-LDn) and grazed on rye grass pasture for 7 days and on chicory based sward for another 7 days for a target consumption of 10 kg DM rye-grass/cow/ day.

Direct visual observations were conducted by two independent

observers, in two sessions per day. During each session, the time the observed cow spent performing any of the three behavioural states (grazing, low activity, ruminating) was recorded continuously by the observers, while electronic behavioural measurements were also continuous.

Data form the direct visual observations were collated into 1-min intervals based on the predominant behaviour of the cow during the observed minute in order to compare with the data generated by the tags. The aim was to collect approximately 15 h (1.5 h/day) of net total time of captured (observed) behaviour for each cow.





Figure 1. Relationship between total time (min/session) measured by observers and time measured by the tag for grazing (top), low activity (mid) and rumination (bottom). Each point represents the amount of time a particular cow was involved in a measured behavioural activity, as observed by the observer (X axis) and the tags (Y axis) The broken line represents the line of equality and the solid line the equation line.

A total of 201 sessions were included in the analysis. On average, each cow was observed for 26.4 (range 22 to 29) observation sessions, with an average duration of 33 min each (range 1 to 80 min per session). Concordance correlation coefficient (CCC) and Pearson correlations (r) were used to investigate the relationships between visual observations and data generated from the tags for each observation session. Different behaviours were analysed separately.

Strong and significant correlations were observed between direct visual observation and tags in all 3 behaviours analysed (Figure 1 on left). The strongest correlations were generated for grazing (CCC =0.99, r=0.99) and low activity behaviours (CCC =0.95, r=0.97).

Whilst the correlation for ruminating was lower it was still significant (CCC=0.80, r=0.80). The length of

the grazing sessions were considerably longer than the recorded sessions of ruminating and low activity.

The tags recorded grazing behaviour with high accuracy in both pasture types, despite the difference in sward height and plant architecture between the two species; and also despite the fact that when cows grazed the chicory-based pasture, they displayed a more active and selective grazing behaviour.

Further work should focus on the use of the data to generate meaningful management guidelines to ensure that value of the technology can be captured on farm.

Please contact Juan Molfino for further information on juan.molfino@sydney.edu.au.



The herd were marked and assessed for 3 different behaviours, grazing, ruminating and low activity

## New research grant from Rural Research and Development for Profit (2nd Round)

The Dairy Science group has been successful in its collaborative bid at the 2nd round of RRD4P.

The \$2.6m successful grant will develop Virtual Herding systems for livestock pasture-based systems (sheep, beef and dairy) of Australia. The project involves several organisations including Dairy Australia (leading agency), CSIRO, TIA/UTA, UNE, University of Melbourne and University of Sydney.

The 4 year project comprises 5 modules. Dr Cameron Clark (right) from the Dairy Science Group is leading the module that will investigate application of virtual herding concept and sensors at sub-herd and individual level for dairy and beef.

Other modules will optimise animal response to virtual fencing technology (CSIRO), evaluate application for grazing management (TIA/UTA), identify opportunities for labour saving in sheep wool and meat enterprises (CSIRO/UNE) and identify challenges for integration and adoption (University of Melbourne).

The project will bring a new post-doc position and in animal

behaviour as well as several PhD opportunities.

Please contact Dr Cameron Clark at cameron.clark@sydney.edu.au for more information.



# Current and future adoption of milking related technologies on Australian and New Zealand

Despite use of advanced milking technologies in Australia (AU) and New Zealand (NZ), there is limited information regarding farmers' choices. Appropriate investment in RD&E needs more information on the current state of milking related technology on farms, future intentions of farmers, and the potential knowledge gaps.

Surveys were conducted in both countries to ascertain milking technology practices. The AU 2015 online survey and the NZ 2013 phone survey gathered 301 and 500 responses respectively.

In AU the top 5 currently installed milking-related technologies were automatic cup removers (ACRs) (71%), herd management software/computers at the dairy (60%), automatic milk plant wash system (43%), automatic in-parlor feeding (37%) and electronic identification (35%). In the next decade farmers expected greater use of automatic heat detection systems (79%), automatic sorting gates (77%), mastitis detection tools (66%), automatic (robotic) milking systems (60%) and in-line milk meters (58%).

In NZ the top 5 currently installed technologies were, electronic identification (37%), automatic in-parlor feeding (33%), ACRs (29%), automatic teat spraying (27%), and automatic sorting gates (15%). Desired technologies included: automatic sorting gates (42%), ACRs (21%), automatic teat spraying (19%), mastitis detection tools (19%) and in-line milk meters (11%).

Overall, more automation technologies that saved labor were installed compared to technologies that collect data to inform decision-making on-farm (e.g. liveweight monitoring). There is an association between technology adoption and larger herd size, so continued uptake of technologies can be expected if herd sizes increase further.

Greater use of data collecting devices will depend on the value perceived by farmers and the fit with their operational management.

Future RD&E investment should focus on integrating data and making data interpretation easier for users with guided management recommendations.

For further information please mail <u>nicolas.lyons@dpi.nsw.gov.au</u>.



## Post Graduate Updates

### Momena Khatun



It's been a lot of fun over the last few months as l've been doing research into early detection of mastitis in pasture-based automatic milking systems.

I've had the chance to join several statistical courses to refresh my statistical background.

I'm now working to find a new algorithm model based on existing recorded data in AMS for detection of mastitis.

My new indexes based on electrical conductivity have been reported at the Spatially Enabled Livestock Management Symposium (<u>SELMS</u>).

The extended indexes will be reported in the upcoming Australasian Dairy Science Symposium.

I have also had the opportunity to join an international workshop on development of bovine udder health control programme, held in Bangladesh from 31 May to 1 June, 2016 - <u>Click here</u> for further information. It was an excellent opportunity for me to hear from multinational speaker and networking with colleagues in the area of udder health and mastitis, which is my core interest and topic of study here.

I actively participated in the workshop by opening the current udder health status and the gaps for successful udder health control program in Bangladesh.

By joining the DRF team at the <u>Dairy</u> <u>Research Foundation Symposium</u> held recently in Wagga Wagga, NSW I had an excellent opportunity to meet with many emerging scientists, company representatives and Australian farmers.

This has highlighted to me the importance of presenting our research findings in more attractive way to the farmers. It was also great fun to travel and stay with colleagues during the symposium.

As a part of my research, I have started with the most commonly used mastitis indicator called electrical conductivity to build up my new indexes.

I am looking to see if my new indexes can help to minimize the false positive mastitis cases in an AMS herd. Finally, I am also planning to run trial experiments to correlate the mastitis indexes I have developed with other common mastitis tests like bacteriological test, Californian mastitis test, somatic cell count test to allow accurate cell level and use of infrared camera to monitor temperature change during mastitis.

l am hoping to present new outcomes in upcoming newsletters.



Momena (4th left) with others at workshop on udder health control in Bangladesh



### Juan Molfino

It's been a busy couple of months for me!

In late June I attended the Dairy Research Foundation's Symposium that was held in Wagga Wagga and had the privilege to participate in the Emerging Dairy Scientists' program with 8 other scientists. I got to share the station with Dr Russ Hovey - from UC Davis - who delivered an exceptional presentation, including an udder dissection!

The Symposium was very interesting with a variety of topics and speakers form different agricultural industries.

In July I went, together with Alex, Ash and Dr Nicolas Lyons from DPI NSW, all the way to the Netherlands to attend the 2016 Precision Dairy Farming, that was held in Leeuwarden, a city located in the Friesland region, were the Holstein Friesland breed was originated. I presented a poster about my research - 'Efficient and Inefficient cows in pasture-based Automatic Milking systems'.

It was an excellent opportunity to present my work to the international scientific community and to network with many of them.

We also visited some typical Dutch commercial farms, and the new Dairy Campus, a really impressive complex, with all brand new facilities



for research, innovation and education.

Dairy Campus is a cooperation between VHL University of Applied Sciences, Wageningen University / Livestock Research, Nordwin College, Dairy Training Centre, LTO Nederland, Friesland Campina, Municipality Leeuwarden and province Fryslân.

In both cases it was great to expose my research to farmers, consultants, researchers and service providers and get some feedback.

Finally, last week, and after a lot of time spent analysing data, I finished writing a paper regarding the study in which we tested the performance of a rumination and activity monitor in pasture based system. The results are included in this newsletter on page 10.

### Alexandra Green

Having recently completed an honours project with Dr Cameron Clark, I'm excited to say that I'm back at the Dairy Research Group to commence my PhD.

Last year I assessed the ability of individual dairy heifers to be trained to a sound stimulus. I found that this was definitely achievable and by the final day of training heifers were responding correctly 92% of the time!

I am still very interested in cattle behaviour and how they use sound signals to communicate within the herd.

I have now turned my focus onto vocal behaviour or as I like to say 'cowmunication'. I am currently doing an extensive literature search and writing a review which will help me formulate my research questions.

So far I have found that there is a massive knowledge gap in the field of livestock vocal communication mainly due to technological limitations in past studies.

Little is known about the information encoded in vocalisations so my first study will aim to analyse the acoustic structure of calls produced by cows anticipating feed.

The eventual goal is to apply what I learn about cattle vocal behaviour as a non-invasive detector of welfare state.



My PhD began in March 2016 and I have already had the opportunity to present work at the Dairy Research Foundation Symposium. I took part in the emerging scientist competition along with 8 other talented scientists from across Australia.

The symposium was a great way to connect with others in my field, including industry experts and farmers, and all of the presentations were very valuable.

I have also visited the University of New England, where I met with behaviourists who taught me all about how to capture and analyse vocalisations.

I am excited to take on board everything I have learnt so far and begin my field work shortly!

### Alex John

I recently attended the 2016 Precision Dairy Farming Conference held in Leeuwarden, The Netherlands where I presented my work on the diurnal feeding patterns of dairy cattle. The aim of the study was to determine the diurnal feeding patterns of dairy cattle when the nutritive value of feed is constant and access is restricted.

Understanding the drivers of cow intake, in isolation of confounding factors, is the first step in understanding how we can manipulate voluntary cow traffic and robot utilisation.

Previous work on diurnal grazing behaviour could explain the diurnal drop in robot utilisation, but is confounded by diurnal changes in feed quality.

A number of conclusions can be drawn from this work. When offered feed of a constant nutritive value, dairy cattle feed in a diurnal pattern with intake greatest at sunrise (0600 -0700h) and sunset (1600-1700h).

Restricting the feed access duration by half decreased intakes by between 13-21% and feeding time by between 22-34%; though, the timing of restriction made no difference to overall lying time. When fed unrestricted (24 h treatment), intakes were lowest between 2400-0600 h – coinciding with period of lowest robot utilization.



My following trials will now investigate how to manipulate cow feeding patterns.

The first experiment aims to determine the Protein : Carbohydrate intake target of cattle applying the geometric framework for nutrition. In all animals where the geometric framework has been applied, a clear preference for a particular protein: carbohydrate ratio has been shown.



Students Alex, Juan and Ashleigh pictured with Nico Lyons (NSW DPI) in The Netherlands at a recent conference

The resultant preferred ratio will then be used in a follow up study as a "preferred" feed. This second experiment will aim to determine if offering larger allocation of feed or a preferred feed in the early morning hours (midnight – 0600h) increases feeding activity during the same period.

The extension for this work in industry, should feeding behaviour be able to be manipulated using this method, would be to offer a 'preferred' feed and vary feeding quantity in the early morning hours to encourage voluntary cow traffic in automatic milking systems.

Back to my visit in The Netherlands; I had the chance to see a number of European barn style dairy systems and also the new Dairy Campus facility in Leeuwarden.



This was a first for me and it was very interesting to see how different dairy farming is in this region of the world along with some very impressive research facilities.

I also had a chance to tour the Lely factory where the Astronaut A4 robots are built, entirely by humans funnily enough.



Amsterdam at dusk

### Meaghan Douglas

I'm Meaghan Douglas and I started my PhD in March 2016, through the University of Sydney and Agriculture Victoria. My university supervisor is Prof Yani Garcia, however I'm based at the Department of Economic Development, Jobs, Transport and Resources in Victoria under the supervision of Dr Bill Wales and Dr Martin Auldist.

I started at Ellinbank in 2014 while undertaking the Honours year of my Bachelor of Science degree through the University of Melbourne. My project investigated the positive association between milk protein concentration and reproductive performance in pasture-based dairy herds, and I was fortunate enough to be able to present this research at the 2015 DRF Symposium at Camden.

This research investigated the physiological, anatomical and endocrinological differences between cows with high and low milk protein



concentration that could explain differences in dairy cow fertility. My paper for this project has just been accepted for publication in

the Journal of Dairy Science – my first paper published in a scientific journal!

My PhD work involves investigating nutritive characteristics of pasture and supplements from across Australia.

My primary focus is on the nutritive characteristics of perennial ryegrass cultivars from the dairying regions of Victoria in each season.

With this information, I hope to determine optimal supplementary feeding strategies for pasture-based dairy cattle during each season of the year.



Two perennial ryegrass cultivars harvested in winter: Trojan NEA2 (left) and Victorian SE (right). Photo taken from Heritage Seeds trial site at Lardner Park, Victoria.

Based on a knowledge of nutrients supplied from the ryegrass pasture, I hope to be able to complement this by formulating a tailored supplementary feeding regimen. This comes with the added challenge of learning to use a nutrition model to formulate these rations!

I'm currently collecting my perennial ryegrass samples from Gippsland, northern and south-west Victoria, and have some of this data back already.

I have also completed my first experiment investigating the ruminal degradation of perennial ryegrass cultivars harvested during early spring, which included collaboration with Ruairi McDonnell from Western Dairy in WA to determine degradation rates of commonly fed concentrates, including wheat and maize grain.

The results from this experiment were interesting, and I hope to publish this data soon.

When I'm not working with the cows at Ellinbank I'm at home with my own cows. My partner and I are share farming near Warragul, milking 280 May-calving cows on 100 ha.

Our cows are a mixed herd of Friesians, Jerseys and Aussie Reds, and I enjoy taking an active role in rearing our calves. I also enjoy the challenges and excitement that comes with pasture management, and growing crops for our cows to enjoy in summer and winter.

My passion is definitely feeding an optimal diet to our cows!

Getting ready to incubate nylon bags for determining ruminal degradation of pastures and concentrates!



### Ashleigh Wildridge

It's hard to believe how much can happen in a few months, but tell you what, it has been a busy few months. At the start of March I finished the field work for my last trial, where I now have only two farm visits for data collection to do this year then I am finally on the home stretch for my PhD!

After I finished my trial in March, I was encouraged to submit an abstract for the Precision Dairy Farmers Conference in The Netherlands, for which I was fortunate enough to be invited to attend and present the results of the trial I conducted in December last year.

Never having been overseas before, this was an amazing opportunity to network with like-minded people from all around the world and to see how the other side of the world works. I presented my work on the use of shade along the laneway between pasture and an AMS to encourage voluntary movement during summer.



The results of this trial revealed a positive effect of small intermittent shade sources along the laneway where the shade resulted in a significant cooling effect as well as encouraging the cows to travel significantly further towards the milking facility within a given time.

After the conference we were lucky enough to be able to visit a farm along with a guided tour through the Lely factory, wow!

From here, my next task is to prepare a paper for the upcoming Australasian Dairy Science Symposium later this year, then the big write-up and final data work begins.



Dairy visit in The Netherlands

## Visitors to Camden

### Laurie Samson

My name is Laurie Samson and I'm from Brittany in France. I am a veterinary student at Ecole Nationale Vétérinaire de Toulouse, in the south of France and I will begin my third year of studies in September.

I started an internship with the Dairy Science Group in mid-June and I was here until late August.

During my first weeks I studied the rumination and locomotion activity profiles of a dairy cow diagnosed with Bovine Ephemeral Fever (3 day sickness) with my supervisor Dr Cameron Clark.

The goal of this research was to know if farmers could detect their sick cows earlier using rumination and activity profiles. A manuscript will soon be submitted.

I have also helped Alex John, a PhD student, with his project about the effect of variable feed allocation on the behaviour of dairy cattle. This was based on the model called 'Geometrical Framework', described by D. Raubenheimer and S. Simpson.

This was my first experience with research and I have found it very interesting to learn about livestock. Students in my school have the possibility to choose their field of research and I have chosen to study dairy cow behaviour here in Australia as it is the perfect



opportunity to improve my knowledge about large animal behaviour.

When I arrived in Australia, I had the opportunity to assist at the 2016 Symposium in Wagga Wagga, NSW. This experience allowed me to learn about the importance of the dairy industry and research in Australia. It was great to visit the countryside and I appreciated this trip all the more since it is my first time here.

I have been lucky to be able to explore on the weekends. Australia is huge compared to France! I was amazed by the view of the Three Sisters (above), and won't get sick of looking at the Harbour Bridge and Opera House! The whole experience has been very enriching and it was great to learn about dairy production from another perspective!

### Alda Tan

Time flies by so quickly! I have been an intern at FutureDairy for over a month already.

I am a chemical engineering major at the University of California, Davis. This September I will be going onto my fourth year. I was fortunate enough to do a study abroad internship in Australia.

I started doing a two-month internship at FutureDairy in mid-July at the M.C. Franklin laboratory in Camden. I am currently working with another fellow intern from my university, Sara Rehimi and Dr. Rafiq Islam from the Dairy Research Foundation.

We are developing a new alkane process to measure feed intake and correlate the measurement to milk production in cows.

There is already an alkane process developed, but our goal is to find a safer and more efficient alternative, as the previous method is hazardous and time consuming.

This was my first experience working with cows. Before arriving in Australia, I did not know much about cows. Since then, I learned how cows are fed and how the automatic milking system works. I was able to visit the farm and see the automatic milking system in action.

Seeing the robotic milking was truly an amazing learning experience.

During my free time, I would walk around the university campus and watch the cows graze on their own. The area surrounding the university is absolutely beautiful. There's lots of grass, trees, and hills. During tea or lunch time, the birds would come out to greet us, anticipating food. The birds here only like meat.

I enjoyed my time here learning about all the different types of animals in Australia.



Alda in the beautiful Blue Mountains, NSW

### Sara Rehimi

My name is Sara Rehimi and I am from Los Angeles, California. I currently attend the University of California, Davis and will begin my 3<sup>rd</sup> year in September.

I am a chemical engineering major, however I am leaning toward food science and hope to work in the food industry when I graduate.

I decided to intern abroad in hopes that I would get more experience in my field. My school's study abroad program used an external company, Australian Internships, to help me and 18 other students find an internship here in Sydney.

I did a series of interviews with AI in order for them to get a better understanding of what kind of internship I was looking for and they placed me here at FutureDairy.

I am working in the lab with Rafiq and Alda on creating a new, more efficient process for alkane extraction. It has been a very interesting experience so far, especially because most people have veterinary science or agriculture backgrounds here; so it is interesting to see things from a non-chemistry perspective. I have worked in a chemical engineering lab before so it is exciting to see the difference with how things are done here. Exploring Australia on the weekends has been a great experience! Whether it be hiking in the blue mountains or kayaking in the harbour, I have enjoyed all of the great things Sydney has to offer.

It makes me sad that my time here in Sydney is almost over, but hopefully I can come back someday and explore even more!



Sydney Harbour put on a beautiful day for Sara's visit

## 50 year milestone for much loved staff member

Farms Manager, Kim McKean is celebrating 50 years with Sydney University this month!

This is a huge achievement and we all absolutely admire Kim for the dedication and loyalty he has shown the University during his career.

Kim started as a young lad of about 15 as an animal attendant and has worked his way up to manage the Universities' Camden Farms.

He has seen a lot of change but nothing quite as immense as the installation of an automatic milking system at Corstorphine in 2014.

Technology with such a huge capacity for change does not come without challenges and Kim will be the first to admit his patience and possibly his sanity have been tested over the past couple of



years. In true Kim fashion though, he has weathered the storm with the good grace that we've all come to know and love.

He has even picked up an award or two along the way!

Congratulations Kim on this exceptional accomplishment, it is truly a pleasure to work with you!

**Dairy Science Team** 

## **Camden Farms Update**

We are now through what has been a cold and rather wet winter and all at the farm are very much looking forward to spring.

The extra rainfall has been great for irrigating but has given the farm staff the normal headaches associated with cows tramping through the soggy conditions.

Despite any hiccups we encounter along the way the cows are loving the voluntary movement system.

The girls are definitely living a wonderfully harmonious life!

## **Recent Publications**

Staff and students from the DRF team recently presented at the Symposium in Wagga Wagga, NSW. A list of papers from the group are or <u>Click Here</u> to view the proceedings document.

Clark, C.E.F., Lyons, N., Kerrisk, K., Garcia, S.C. (2016) Hunting Efficiency through Technology. Proceedings of the Dairy Research Foundation Symposium, The University of Sydney, Camden. 21: 39-40

Molfino, J, Garcia, S.C., Kerrisk, K.L. (2016) Efficient and Inefficient cows in Pasture-based Automatic Milking Systems. Proceedings of the Dairy Research Foundation Symposium, The University of Sydney, Camden. 21: 64-69

Green, A., Thomson, P., Cronin, G., Kerrisk, K.L., Garcia, S.C., Clark, C.E.F. (2016) Testing decision making in dairy heifers using a sound stimulus. Proceedings of the Dairy Research Foundation Symposium, The University of Sydney, Camden. 21: 74-78

Wildridge, A, Garcia, S.C., Thomson, P, Clark, C.E.F., Jongman, E, Kerrisk, K. (2016) The impact of a partially shaded laneway on voluntary cow movement to an automatic milking system. Proceedings of the Dairy Research Foundation Symposium, The University of Sydney, Camden. 21: 106-110

John, A.J., Garcia, S.C., Freeman, M.J., Kerrisk, K.L., Clark, C. E. F. (2016) Diurnal feeding patterns of dairy cattle and implications for automatic milking systems. Proceedings of the Dairy Research Foundation Symposium, The University of Sydney, Camden. 21: 80-85

### What's planned for the rest of 2016

• Professor Yani Garcia is taking the lead role in the organising of the <u>Australasian Dairy Science Symposium (ADSS)</u>. This event will take place on the 16 - 18 November 2016 on the University of Sydney's main campus Camperdown.

