FACULTY OF VETERINARY SCIENCE

THE UNIVERSITY OF SYDNEY

DAIRY RESEARCH FOUNDATION NEWSLETTER

Volume 5 - Issue 1, MARCH 2013

DIRECTORS' UPDATE

Welcome to our first edition of 2013!

Still tough times for dairy farms in our region but we keep working hard on innovative research to help farmers increase labour productivity and systems' efficiency.

Assoc. Prof, Yani Garcia
Director of the DRF

Please take a look inside at our research news and updates...

We are moving to the coast with our dairy symposium this year.

The event will be held in beautiful Kiama, NSW on 4th and 5th July, whilst Dairy NSW will have their meeting on 3rd July also in Kiama.

A very exciting program is shaping up...more inside...! *Yani Garcia*

FROM THE PRESIDENT

Mr. Bill Inglis,
President of the DRF

I recently had the pleasure of being invited to be part of the selection committee for the new Skills Based Board of Dairy NSW.

What was particularly pleasing was the high standard of the candidates and their positive views on both the future of the dairy industry in NSW and of the role of RD&E in achieving that future.

I look forward to a continued close relationship between the DRF and Dairy NSW. *Bill Inglis*

IN THIS ISSUE:

2013 DRF SYMPOSIUM 'TAKING CONTROL'

This year we are taking the Symposium to Kiama. The event will take place on July 4 and 5 and will once again follow on from DairyNSW industry meetings scheduled for Kiama on July 3.

Day 1 of the Symposium and the Symposium dinner that evening will take place at the Kiama Pavilion, while Day 2 of the event, which incorporates the Emerging Dairy Scientists' program, will take the format of farm tours, visiting the Strong family's CloverHill Dairies at Jamberoo and John and Andrea Henry's robotic dairy at Nowra.

We anticipate that in 2014 the DRF Symposium will be back in Camden, to herald the opening of our new rotary AMS, so this is the perfect opportunity to take the Symposium 'off site' for a year!

DRF Director, Assoc. Prof Yani Garcia has appointed Assoc. Prof. Kendra Kerrisk as chair of the programming committee, while specialist agricultural events consultant Esther Price Promotions will manage the event.

The full program will be released by the end of March.

More information in relation to sponsorship, exhibition, program and registration is available from Esther Price Promotions, by contacting esther@estherprice.com.au or 1800 177 636

PROJECT UPDATE

Assoc. Prof. Kendra Kerrisk

In this issue of the DRF newsletter you will read updates from many of the students and scientists involved with the FutureDairy 3 program of work. The common theme is the link and relevance to Automatic Milking Systems which is the basis for our project.

The AMS research facility has been decommissioned and all of the cows have been merged with the herd at the No.9 dairy at EMAI. The cows have settled into their new twice daily milking routine well although one or two have found their way back to the AMS dairy on a couple of occasions.

The AMS cows continue to contribute to our research outcomes through historical analysis predominantly of cow traffic data. In addition our research is continuing with the valued input of commercial farmers, some modeling work and some theory testing with the university conventional milking herd.

There are currently 18 AMS farms in Australia and these are very varied with regard to herd size and farm system type. At the moment there are AMS farms in Tasmania (x4), Victoria (x6), South Australia (x4), NSW (x2) and Queensland (x2). In addition there are new installations being commissioned in Queensland and Western Australia. We are very pleased to be able to announce that the DRF Symposium (4th and 5th July) will be held in Kiama this year and that one of NSW's AMS farms will be included in the farm tour to be held on Day 2.

The operation of Andrea and John Henry is very interesting particularly with regard to how it is fitted within the wider business which includes their contract forage harvesting. The story of how AMS has allowed the Henry's to re-enter the dairy industry is sure to attract a significant amount of interest.

Recent AMS research has involved:

- Survey of AMS and conventional milking systems to determine any AMS specific management and system changes that have occurred. This work will allow us to create an understanding of the reasons for management and system changes that are occurring on AMS farms and whether these are likely to be common trends.
- Building case studies to showcase how commercial AMS farmers are capturing the benefits of AMS on farm.
- Developing breeding strategies for AMS cows.
- Understanding the impact of cows entering pasture at different stages of depletion after having received different allocations of pelleted concentrate at the dairy.
- Understanding the impact of providing a reward (for a short term) at milking to cows that are not familiar with receiving that reward. What is the impact on cow traffic during the provision of the reward and how does cow traffic change when the reward is removed?
- Pasture allocation monitoring on two commercial pasture based farms. Quantifying the volume of pasture made available at different times of day in two farms with different pasture allocation management systems. Can we develop a recipe for pasture allocation that achieves high levels of cow traffic right throughout the day and night.

So you can see that we are continuing to keep ourselves very busy. You will read about many of these areas of research in this edition of the newsletter.

For more information, contact Assoc. Prof Kendra Kerrisk at kendra.kerrisk@sydney.edu.au

THE VOLUNTARY COW TRAFFIC OF DIFFERING BREEDS IN AMS

By Cameron Clark, Niek Kwinten, Danny van Gastel, Kendra Kerrisk, Nicolas Lyons and Yani Garcia

Automatic milking systems (AMS) rely upon voluntary cow traffic (the voluntary movement of cattle around a farm) for milk harvesting and feed consumption. Previous research on conventional milking systems has shown differences between dairy cow breeds for intake and milk production, however, the ability to manipulate voluntary cow traffic and milking frequency on AMS farms through breed selection is unknown.

This study investigated the effect of breed (Holstein Friesian versus Illawarra) on voluntary cow traffic as determined by gate passes at the Camden AMS research farm dairy facility. Daily data on days in milk, milk yield, gate passes and milking frequency for 158 Holstein Friesian cows and 24 Illawarra cows were collated by month for the 2007 and 2008 years.

Illawarra cows had around 10% more gate passes/day than Holstein cows over the duration of the study; however, the milking frequency and milk yield of both breeds were similar.

These findings suggest that breed selection will have an impact on voluntary cow traffic in pasture-based systems and highlights an opportunity to improve AMS performance through cow selection. The ability to increase milk production per cow, and optimise AMS unit efficiency, by altering the minimum milking interval of varying breeds and/or individual cows for differing feeding systems requires further investigation.

INCREASED IRRIGATION WATER INCREASES YIELD BUT DECREASES NUTRITIVE VALUE IN MAIZE SILAGE

Maize requires ~8 ML water (irrigation plus rainfall) to produce ~25 t DM/ha for silage. In many Australian dairy farms, maize is grown for silage which in turn is used to complement cow's diets at times when pasture availability is low.

However, despite the high potential forage yield, the problem of growing maize for silage in many key dairy regions is that high water is required to maximise yield.

In the future, water availability in areas such as the major irrigated Murray-Darling basin in Australia may decline by 20–40% due to the 10–20% predicted decline in rainfall (CSIRO, 2008). This decline in water availability may raise the price of water up to ~18%, with an estimated 5% reduction in water use (ABARE, 2010).

Thus, irrigation strategies designed to improve both nutritive value and yield without compromising each other may be more important than emphasising either yield or nutritive value of maize grown for silage.

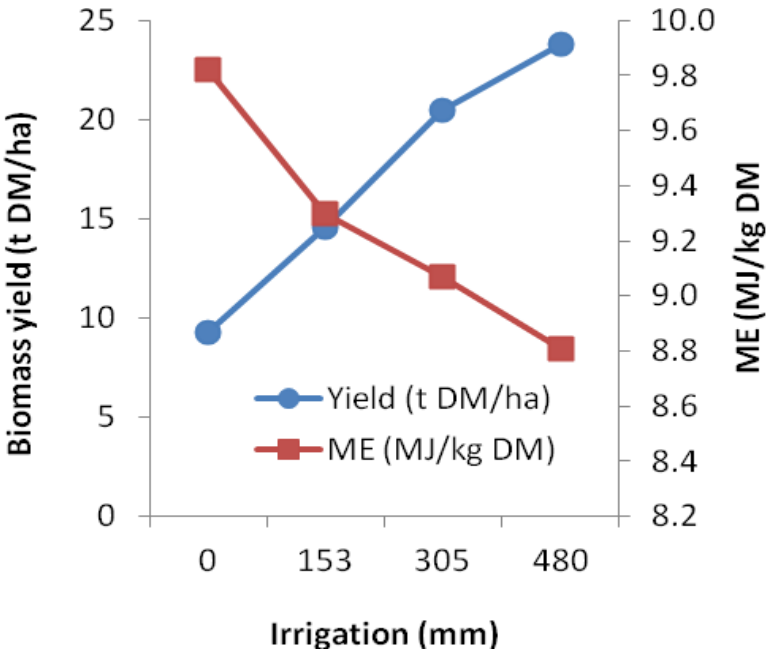


Figure 1. Irrigation water effect on biomass yield and metabolisable energy content of maize silage

INCREASED IRRIGATION WATER INCREASES YIELD BUT DECREASES NUTRITIVE VALUE IN MAIZE SILAGE (cont)

The aim of this study was to investigate the effects of irrigation water on yield and nutritive value of maize silage. Hybrid forage maize (Pioneer 31H50) was grown at Camden with 6 rates of N fertiliser (0-293 kg/ha) and 4 levels of irrigation water (0, 153, 305 480 mm). Maize was harvested at physiological maturity, chopped at a particle length of ~2.5 cm and ensiled in micro-silos.

Our study showed that increase in irrigation water (0–480mm) increased proportion of grain and consequently total DM yield from 9 to 24 t/ha (Figure 1).

However, despite an increase in proportion of grain, increase in irrigation water also increased NDF content of the whole plant silage, but decreased CP and WSC (Figure 2). Thus, ME contents of silage decreased from 9.82 to 8.81 MJ/kg DM (Figure 1).

The potential implication of this study is that maximizing forage yield of maize crop can adversely affect the nutritive value of silage.

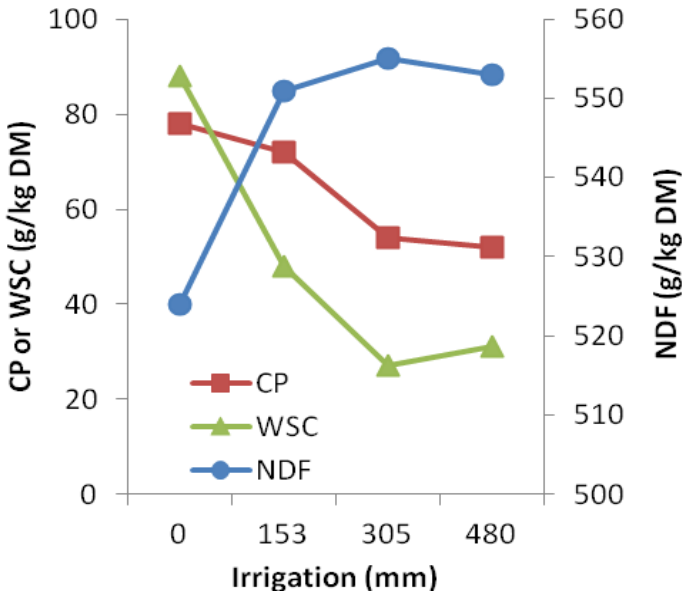


Figure 2. Irrigation water effect on crude protein (CP), water soluble carbohydrate (WSC) and neutral detergent fibre (NDF) of maize silage

For further information please contact Dr Rafiq Islam at md.islam@sydney.edu.au

IMPROVING FEED CONVERSION EFFICIENCY

By Ravneet Jhajj and Cameron Clark

Work is currently underway to determine ways to improve FCE within pasture-based AMS systems. During the 1st phase, the impact of current pasture-based AMS farm management on dairy cow rumen environment, animal health and milk production will be determined through experimental trials. The 2nd phase will use this research-generated information to generate new ways of management to improve AMS FCE.

A 24 hour allocation of pasture is typically split into 3 allocations in automatic milking systems (AMS) to encourage cow traffic. As AMS dairy cows typically move from depleted to fresh (new) allocations of pasture in small groups or individually at differing times, there are large differences in the state of pasture that cows within the same herd get access to. For instance, if cow A leaves a paddock at the time that a new allocation opens then she will have access to a very large allowance of typically high quality pasture (due to the ability to select) for extended periods of time. Conversely, cow B stays in the older allocation of pasture for a greater time than cow A and accesses what will now be a depleted pasture state of poorer quality (greater proportion of stem and greater NDF) as the majority of the herd have grazed through it. To go with this, grain-based concentrate (GBC) is currently offered at a range of levels independently to the pasture states so that cows A and B could be offered the same allocation of concentrate.

The DRF Annual General Meeting will be held in April 2013

Date will be advertised very soon

IMPROVING FEED CONVERSION EFFICIENCY (CONT)

As the first phase to improving FCE within pasture-based AMS systems, the impact of cows accessing these various pasture states (including those that access differing pasture states within a day) on the rumen environment, animal health and milk production of dairy cows, such as A and B above, is being determined by the FutureDairy team by conducting two component trials.

These component trials, conducted in a conventional milking system, will replicate the pasture states that face AMS cows but in a more controlled environment.

Each trial will be identical with the exception of pasture type as we expect the impact to differ between kikuyu and ryegrass. The kikuyu trial was just completed and the ryegrass trial is planned for spring.

Kikuyu trial

For the kikuyu trial, 90 cows in mid-lactation were selected from the University of Sydney's Corstorphine dairy. These cows were then separated into 4 groups matched for milk yield, body weight and DIM and offered 2 allocations of adlib pasture (New allocation and Depleted allocation) each day after each milking.

Group 1: New AM, New PM
Group 2: Depleted AM, Depleted PM
Group 3: New AM, Depleted PM
Group 4: Depleted AM, New PM

Each of these groups were further sub-divided into 3 groups allocated low (3kg), medium (6kg) and high grain-based concentrate (9kg).

The rumen environment, pasture intakes, milk yield and content, body weight and animal behaviour were recorded during an intensive 7 day experimental period in late January early February. Although the weather tested us we completed the kikuyu trial and the results are currently being compiled and analysed. We hope to provide another update to this exciting work in the next DRF newsletter.

IMPACT OF AUTOMATIC MILKING SYSTEMS (AMS) ON LABOUR AND LIFESTYLE ON COMMERCIAL FARMS IN AUSTRALIA

By Juan Molfino

My name is Juan Molfino and after finishing my degree in Argentina (Bachelor in Applied Science), I spent some time working in the dairy industry in Argentina and New Zealand. A year ago I started working with FutureDairy at the Camden AMS research farm and now I am ready to start a new research project.

As labour is the most significant operational cost likely to be affected by AMS, it is not surprising that farmers contemplating adoption are seeking sound data regarding the impact of AMS on labour and lifestyle.

However, it seems apparent that the benefits are captured on farm in different ways such as an absolute reduction in labour units, a reduction in the hours worked per labour unit and/or a shift in time spent on various tasks with increased focus on management of different aspects of the farm operation.

Whilst there are a considerable number of international publications on investigations into the impact of AMS on labour and lifestyle, all of them pertain to indoor systems where cows are housed.

The aim of my work is to determine what happens in typical pasture-based AMS farming systems.

We will conduct detailed labour audits on a number of commercial AMS farms that will be published to show how AMS farmers spend their time and how that time is apportioned to different tasks on their AMS farms. We will also create some Case studies of commercial farms so that farmers can relate to show farming systems and operations and routines harnessed on farm before and after AMS *(cont).*

IMPACT OF AUTOMATIC MILKING SYSTEMS (AMS) ON LABOUR AND LIFESTYLE ON COMMERCIAL FARMS IN AUSTRALIA (cont)

This project will allow us to develop an understanding of the labour savings realized with AMS on commercial farms across Australia. Understanding how the benefits of AMS are being captured on farm will ensure farmers considering the technology have realistic expectations of the impact of the technology. This will assist them in making informed and knowledgeable decisions about the investment in AMS.

LEARNING FROM SUCCESS: PASTURE ALLOCATION ON AMS FARMS

Dr Cameron Clark

FutureDairy has teamed up with the Tasmanian Institute of Agriculture to fine tune pasture allocation on AMS farms.

Cows move voluntarily around automatic milking system (AMS) farms. Movement around AMS farms can be encouraged in a number of ways but the most effective and reliable motivator is feed. Pasture is the predominant feed source on the majority of Australian AMS farms and, in this regard, pasture allocation has an effect on cow movement and the overall success of the system.

FutureDairy work has shown that offering AMS cows 2 vs. 3 breaks of pasture increased cow traffic as less feed was offered in each break for 3 allocations, increasing the incentive for cows to move around the system. In the same work, equal proportions of pasture were offered in each break and active access time split equally across a day.

LEARNING FROM SUCCESS: PASTURE ALLOCATION ON AMS FARMS (cont)

However, dairy cattle tend to have times when they are active and when they rest.

In conventional milking systems and in AMS, cows are typically more active during the day than night sleeping between 0200 h to 0400 h in the early morning.

The impact of altering the time and proportion of pasture in each break on voluntary cow movement in AMS is unknown.

Anecdotal data from two commercial AMS farms with excellent voluntary cow movement suggest that these farmers allocate pasture according to the previously mentioned cow activity to encourage voluntary cow movement, and as a result fetch very few cows.

FutureDairy is collaborating with the Tasmanian Institute of Agriculture (TIA) to obtain data on the timing and quantity of feed allocation on two AMS farms located in Tasmania and Victoria with excellent voluntary cow movement. The data captured from these farms will then be packaged and made available to aid pasture allocation decisions made by all pasture-based AMS farmers.

For further information please contact Cameron at *cameron.clark@sydney.edu.au*

POST GRADUATE UPDATES

NICOLAS LYONS *PhD Student*

Planning to finish and submit my thesis by the end of March 2013 has meant a lot of data analysis and writing for the last couple of months.

Most of my chapters are almost finished now, and some of them have been submitted for publication. Now the hard job of putting everything together is underway!

My most recent writing has been a chapter about cow traffic during the first six weeks of 24/7 voluntary cow traffic with the prototype Robotic Rotary (DeLaval AMR – Automatic Milking Rotary). Data collected during the period February – March 2011 was analysed for this chapter.

The aim of the analysis was to investigate the impact of denying a cow milking permission and how long it would take for the cow to make her way back to the dairy for another attempt at gaining access to the dairy.

During this period 10% of all milking events were preceded by a milking permission refusal – i.e. the cow tried to enter the dairy for a milking but was refused and released back to pasture.

On average these milking permission refusals occurred 3 hours after the last milking. Overall in comparison to those that had not been previously refused, cows which had been refused had a 3.5 hour greater milking interval. Furthermore, they had a 25% greater proportion of milking events that occurred with intervals over 16 h (which are known to have negative effects on milk yield and udder health).

For pasture-based farmers adopting automatic milking systems this could mean that milking permission settings should take into account that pasture-based cows refused access to the dairy may have longer milking intervals. Additionally routines could be put in place to manage those cows that arrive back at the dairy prior within the set minimum milking interval, for example pre-sorting to a feeding area close to the dairy.

In the next newsletter I will hopefully be sharing news of my submission and future plans!

HELEN GOLDER *PhD Student*

ACIDOSIS FEED ADDITIVES TRIAL

Feed additives are a component of reducing acidosis risk in the dairy and beef industries. There are a number of feed additives commercially available that aim to modify the rumen and its bacteria by different methods.

In practice combinations of feed additives can be fed with the aim of producing complementary beneficial effects. We conducted a trial to evaluate the effects of feed additive(s) on clinical signs of acidosis, feed intake and rumen and blood measures during a non-life threatening but substantial starch and fructose challenge.

Forty Holstein heifers (n = 8 heifers/group) were allocated to 1 of the following 5 feed additive groups: (1) control (no additives); (2) virginiamycin (VM); (3) monensin + tylosin (MT); (4) monensin + yeast (MY); and (5) sodium bicarbonate + magnesium oxide (BUF). The heifers were fed a total mixed ration (TMR) with a 62% forage and 38% concentrate content at 1.2% of bodyweight dry matter for 10 days plus their respective feed additive(s) at manufacturers' recommendation.

Heifers being individually feed their treatment diets.

POST-GRAD UPDATES (cont.)

HELEN GOLDER *PhD Student* (cont.)

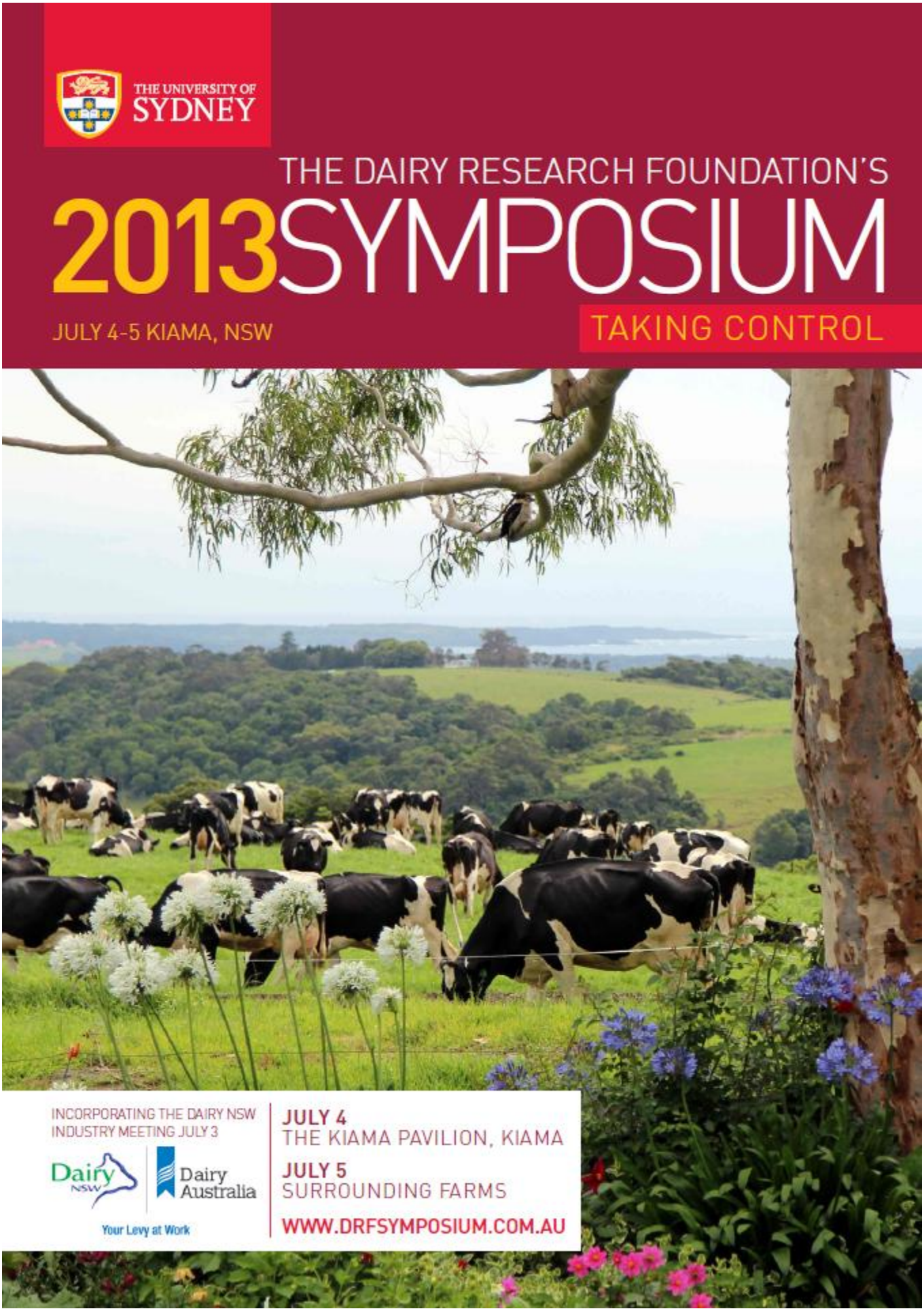
Fructose was added to this diet for a further 10 days. Individual feed intake was measured twice daily over the 20 day period and bodyweight, rumen and blood samples were taken weekly. On day 21 heifers were given a single challenge feed of starch, fructose and their feed additive(s). Rumen and blood samples were taken over the initial 4 hour period after they had consumed their diet.

The response to the challenge diets was variable between individual heifers within each group and was severe enough to produce lactic acid concentrations above normal for the average of each feed additive group. One heifer in the control group had acute acidosis on the challenge day (day 21) and had recovered by day 23. Her rumen and blood profile was examined over the length of the trial up to her recovery and a case report has been submitted to The Canadian Veterinary Journal.

The VM and BUF groups were the most effective at reducing the risk of acidosis. They maintained the highest feed intakes over the 20 day period and had the lowest lactic acid, propionate and valerate concentrations. The MY combination reduced ammonia, lactate and histamine concentrations but also feed intake.

No feed additive(s) were effective at stabilising the rumen in all heifers within their group. Comprehensive results from this trial will be submitted for publication in the near future.

Dr. Pietro Celi and Helen Golder collecting rumen fluid using a stomach tube and pump on challenge day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TORI SCOTT *PhD Student*

PhD student
Tori Scott

As much as I don't want to admit it, I am now entering my third and final year of my PhD, with thesis submission looming in 12 months' time.

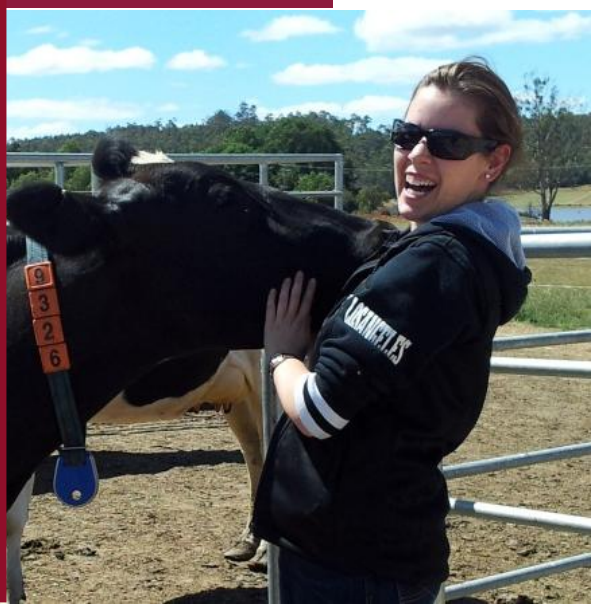
I have plenty of data to keep me busy though, looking into the use of feed incentives to increase cow traffic within Automatic Milking Systems (AMS).

I have just returned to Camden after spending 5 weeks in picturesque Tasmania, conducting a research study looking into the impact of feeding molasses as a reward at milking on cow traffic on a commercial Robotic Rotary.

The herd was naïve to both molasses, and the concept of a feed reward at milking.

It was a fantastic experience, and I have taken away from it many great memories and would like to thank the Dornauf family very much for accommodating me on their farm and for this opportunity.

The main aims of the study were to investigate the effect of a feed incentive on a naïve herd, capture the time it takes for the herd to recognise the reward, and determine the impact on cow traffic if the reward was removed.



MOLASSES FEEDER ON A ROBOTIC ROTARY PLATFORM

A preliminary glance at the data indicated that the main herd neither improved their speed onto the milking platform from the pre-milking yard when molasses was added, nor did they worsen when the molasses was removed.

MOLASSES FEEDER ON A ROBOTIC ROTARY PLATFORM (cont.)

Interestingly, however, results are suggesting that cows that were sent for a second milking (incomplete on their first, due to a number of reasons), cows that were already identified as poor traffickers, and cows that were overdue for milking (>15hrs since last milking) improved their traffic by more than 10 minutes per milking when molasses was added.

When molasses was taken away, an additional 10 minutes voluntary waiting was observed per milking when comparing waiting time with their "standard" time measured in a control period.

I look forward to really delving into the data to determine if these preliminary results are significant or not, and to determine if any other relationships can be identified.

Trials like this are extremely valuable in helping us to understand the impact of different management practices on cows in an operating system that allows cows to have a large influence over their own daily routines.

This understanding often has implications for conventional farming systems as well.

Results from this study will be highlighted in coming editions of the newsletter.

Molasses feeder on a Robotic Rotary platform

SARANIKA TALUKDER *PhD Student*

INFRARED CAMERA AS OESTRUS DETECTION AID

Recently, as a component of my PhD study, an intensive trial was conducted at Corstorphine farm.

The aim was to explore the potential use of infrared thermography (IRT) for oestrus detection and prediction of ovulation in dairy cows.

Twenty cows were synchronized using controlled internal drug release (CIDR) and prostaglandin$F_{2\alpha}$ ($PGF_{2\alpha}$). Vulva and muzzle skin temperatures were measured every 12 h from CIDR insertion to 32 h post $PGF_{2\alpha}$ injection and then every 4 h until ovulation occurred.

Thermal images obtained with a FLIR T620 series infrared camera.

A positive ($P < 0.01$, r = 0.74) relationship was noted between muzzle and vulva temperature.

Both Vulva and muzzle temperature increased after PG injection compared to those before $PGF_{2\alpha}$ injection.

Onset of oestrus and ovulation occurred 54.7 and 87.3 hours after PG injection. Muzzle and vulva temperature also changed with time of approaching ovulation.

The next step is to look at the accuracy of this non-invasive technology by comparing with hormonal profiles.

VISITORS TO CAMDEN

CECILIA CAJARVILLE and JOSE LUIS REPETTO

Cecilia Cajarville and José Luis Repetto from Uruguay, South America, are visiting the University of Sydney and they will be based at the MC Franklin Lab, Camden.

Cecilia and Jose Luis came with their 2 young children. They will be working with Assoc. Prof. Yani García and the FutureDairy team until early May, with the main goal of developing linkages, collaborations and interchange of postgraduate students between the two countries in the future.

UNIVERSIDAD DE LA REPÚBLICA URUGUAY

Uruguay has a population of almost 3.5 million, a land area of 176,215 km2 and is an agricultural country, with agricultural products representing 72 % of total exports. Approximately 80 % of meat and 65 % of milk products are exported, even though the country has a high domestic consumption of beef meat (60 kg/hab/year) and dairy products (200 l/hab/year). Today, Uruguay is the highest exporter of milk and the 2nd highest exporter of beef in the region.

Cecilia and José with their daughters on the girls first day attending the local Cobbitty Public School.

Cecilia Cajarville is a Professor with the Animal Nutrition Department of the Public University (UdelaR) and has published research papers in forages and reserves evaluation and on digestive utilization by ruminants.

José Luis Repetto is a Professor, with the Bovine Department of the Public University (UdelaR) and he is also the vice-president of the National Institute of Agricultural Research of Uruguay (INIA).

Both scientists obtained their PhD degrees in ruminant nutrition in Spain (Universidad Politécnica de Madrid-Universitat de Lleida) and worked as consultants in dairy Cooperatives in Uruguay before making a full-time commitment to the Uruguayan University.

These days, Cecilia and José Luis teach Veterinary Science and develop research with their MSc and PhD students. They share the leadership of a research group that works on issues related to the digestive use of food by animals, with special emphasis on ruminants in grazing systems.

The group works closely with the Uruguayan dairy industry especially with 2 cooperatives (CONAPROLE and CALCAR) that process more than 80% of the milk in the country. They also have agreements with other groups working in Uruguay and Brazil, joining research and postgraduate programs.

During 2013, a new campus of the Veterinary Faculty in San Jose will be built. The aim of the campus is to become multidisciplinary and multi-institutional, concerned with the development of technologies and teaching for dairy and intensive livestock production.

Cecilia and José Luis have travelled to Australia to meet the FutureDairy team. Of particular interest to the academics is the permanent interaction the Australian team has achieved with the dairy industry, solving practical problems, whilst maintaining the high scientific level in the studies.

One aspect of interest for the Uruguayan visitors is the research of FutureDairy into developing 'sustained increase in productivity within a grazing system that includes lifestyle issues' as important topics.

Two of the research groups lead by Cecilia and José in Uruguay

VISITORS TO CAMDEN

DANNY VAN GASTEL and NIEK KWINTEN

After a short, but very productive time with the FutureDairy Project we have completed the internship as part of the requirements for our Animal Husbandry course with HAS Den Bosch. Our time was spent working extensively with Dr Cameron Clark and Assoc. Professor Kendra Kerrisk.

We investigated the 'impact of dairy cow breed on voluntary cow traffic in an AMS' as a first step in FutureDairy's program of determining the ability to select cows highly suited to pasture-based AMS.

Contrary to our expectations, findings showed that Illawarra cows had greater cow traffic than Holstein cows but both breeds had a similar milking frequency and milk yield.

As feed is the primary motivator for cow traffic in an AMS, these preliminary findings suggest that the Illawarra cows evaluated in this work had a greater hunger drive leading to greater voluntary cow traffic.

This pilot study confirms that further analysis is required on a larger dataset to determine the effect of breed on voluntary cow movement and the heritability of this trait for future genetic selection on AMS farms.

Alongside our research, we travelled around 10,000km to see a large part of the east coast of Australia and enjoyed our time here.

We had a great time at the M.C. Franklin Lab.

Thank you to the FutureDairy team.

Danny and Niek

has university of applied sciences

CAMDEN FARMS

Times are even busier than normal on Camden Farms at the moment.

Calving is about half way through an expected 160 calves to be born over a short period. So far we have seen 3 sets of twins.

The most recent heavy rains forced the local Nepean River up again and we expected some localised flooding. We had a bit of luck that many other farmers didn't and the river held its banks. Camden farms have managed to avoid any real damage from the excessive rainfalls in the area.

Sowing has just been started at Corstorphine and Bringelly farms. So far, a total of about 15 hectares has been sown with Ryegrass and Oats which we expect to start grazing in early April.

Kim McKean

Camden Farms Manager

The ups and downs of life on a dairy farm !

THANK YOU TO OUR MEMBERS FOR YOUR CONTINUING SUPPORT

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MR BILL INGLIS
(Craigend - The Oaks, NSW)

MR ROWAN MOORE
(Glenmore - Camden, NSW)

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