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Special points of interest:

- The Foundation is changing
- Our AGM and Council meetings are coming up in the next couple of months
- Interesting results from post graduate studies
- 2009 Symposium

Inside this issue:

Dairy Research Foundation

Foreword

Assoc. Prof. Yani Garcia
Director

Welcome to the 2nd issue of the reformatted DRF Newsletter and the first for 2009!

The Newsletter will now be issued every four months (February, June and October). We hope to keep all Foundation members, sponsors, and the dairy industry in general, informed of our latest developments.

In this issue we have exciting news with FutureDairy 2 up and running and the consolidation of the Dairy Science research group at Camden.

There are difficult times ahead for the Australian dairy industry as a result of the international financial crisis and its impact on milk price. Today, probably more than ever, Australian farmers need more options in front of them and improved tools to ensure they can make better and more informed decisions.

The Dairy Research Foundation is strongly committed to contributing to this, through research, teaching and training in all aspects of dairy science.

We hope you continue supporting us. Have an enjoyable read and make sure you send us your feedback!

Y.G.

From the President - Issue challenging dairy research in the future

Mr Bill Inglis, President

Recently I had the pleasure of attending an innovation forum. The keynote speaker was Dr Terry Etherton , Professor of Animal Nutrition at Penn State University in the USA.

Dr Etherton's talk touched on many subjects but centred on the threats to Agricultural Sciences from high powered environmentalist groups and the power of these groups to influence governments; and ultimately the amount of government funding that goes into research.

He also noted the trend for well educated affluent urban populations to become increasingly suspicious of intensive agricultural systems. All of this at a time when world population continues to grow rapidly.

The forum also discussed the problems of getting adequate extension to farmers and attracting high quality students to agriculture. Clearly these are a number of issues challenging us in the Dairy Science field and we will have to work closely together to meet these challenges!

B.I.

Important changes to the administration of Foundations

As a consequence of changes to university reporting requirements to the Federal Government and concurrent changes to the NSW Charities Act a standard set of rules is to be implemented under which Foundations will operate. These are known as 'The Foundations Rules'. For reporting and auditing purposes, this will ensure that all 41 Foundations within the University comply with these government guidelines.

A consequence of this is that the DRF will be required to adopt 'The Rules' in place of the current Constitution and elect a Council of no more than 16 Members who, along with 2 ex-officio members of the University, will represent the DRF.

Discussion on this will be held at the next few Council meetings as to how this be done and what affect it will have on the DRF, membership etc. Voting on this will be done at the 2010 AGM .

Council meetings will be held twice annually in April (with AGM) and October. The next Council Meeting for the Foundation is to be held on Wednesday 8th April followed by the 2009 Annual General Meeting on the same date.

2009 Symposium

This year the Symposium will be held at the New Lecture Theatre on Camden Campus on the Wednesday **16th and Thursday 17th September (subject to confirmation)**, a more practical time of year for farmers.

The theme is 'Feeding for the Future' and we will have researchers and farmers presenting on aspects of feeding the herd such as how to manipulate milk components; achieve high production per cow with high forage diets; and increasing the flexibility of the system.

Whilst we would hope that the 'New Concept' AMS might be a major drawcard for this years Symposium this may be influenced by progress on site and whether or not the facility is in a position to host visitors at the time of the Symposium.

All details will be announced in the June edition of the Newsletter. The DRF and FutureDairy websites will also contain information as it is made available.

Staff, Students and Visitors

Post graduate student Helen Smith has taken up a position with Landcare in Tenterfield NSW and is to complete her thesis whilst there.

An occupational trainee has joined the group in late February (previously due November) for six months. Mr Mehdi Kazemi is an advance PhD student from Iran and will complete a training period in ruminant research with our Dairy Science group.

New Research Staff

We welcome Dr Rafiq Islam, a new Research Fellow who commenced in January. Rafiq is an

Dr Rafiq Islam Research Fellow with FutureDairy

Agronomist originally from Bangladesh who completed a PhD in Forage Science at the University of Reading, UK, and a post-doc in Forage Production and Ruminant Nutrition in Japan.

Rafiq will be developing a research program in Forage Production and Utilisation for Australian dairy farming. He is currently investigating the effects of nitrogen on maize for silage in the context of FutureDairy's Complementary Forage Rotations (CFR).

Mr Ranjan Dam has also joined our group as a Technical Officer (part time) and potential MSc student. Ranjan is helping Dr Islam and Mr Davinder Singh Jhajj with all the field activities at Mayfarm and Corstorphine dairy.

Occupational Trainee Mehdi Kazemi

Davinder Singh Jjahj amongst the crops at Mayfarm

Important dates to remember

The Annual General Meeting and Council Meeting for the DRF will both be held on Wednesday 8th April 2009

The 2009 DRF Annual Symposium is to be held Wednesday 16th and Thursday 17th September (subject to confirmation)

The Dairy Research Foundation Newsletter will now be published in February, June and October

FutureDairy 2 update

FutureDairy 2 comprises two main areas of research: Precision Farming and Feed-base.

Feedbase is led by Yani Garcia and integrates the previous Forages and Feeding modules.

Precision Farming is led by Dr Kendra Kerrisk and includes Automatic Milking and other innovations with the greatest potential to impact on productivity and farmers' lifestyle.

Precision Farming

Automatic Milking System (AMS)

The AMS farm at EMAI was commissioned in May 2006 with the anticipation of milking 120 cows through the two milking units. Since then we have developed the confidence and the knowledge to increase the herd size to 165 and have learnt that, within the bounds of the type of system we are operating, the AMS units can cope with 80 cows per station when cows are milking at a sustained average milking frequency of 1.75 milking/cow/day (i.e. 140 milkings/station/day). This breakthrough will have a large impact on the economic analysis of AMS (currently being analysed).

The AMS dairy is currently closed to visitors whilst we prepare for the second phase of the research with a new prototype AMS being installed. The closure period is necessary to minimise the disruption to staff during the installation and construction phase and will allow a more rapid adaptation of the cows to prototype during the initial testing phases. The new prototype has been designed specifically for larger herds with the machine targeted to milk in excess of 240 cows (with twice-a-day milking) which should make the technology more affordable for herds that would otherwise need to invest in a number of AMS likely to exceed 4 stations.

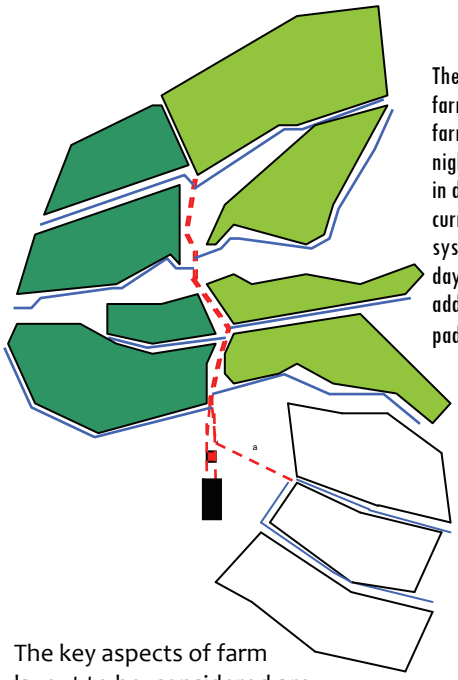
Farm layout recommendations

The latest AMS information sheet to be posted on the FutureDairy website was the lessons and recommendations regarding farm layouts suited to AMS.

Whilst most farm layouts will allow the incorporation of AMS into the farm there were reportedly some layouts that are better suited.

The importance of farm layout cannot be underestimated when good cow flow is imperative for the system to be successful.

In an AMS farm the cows move themselves around the system, visit the dairy where they are milked largely without human assistance and therefore need to able to find their way around the farm without being herded by farm staff.



The diagram shows the farm layout of the AMS farm at EMAI. Day and night paddocks are shown in different colours for the current two-breaks a day system. A three-breaks a day system would need an additional area (unshaded paddocks).

The key aspects of farm layout to be considered are :

- The distance from the furthest paddock to the dairy (in our case 1.2km)
- The number of lane-ways/directions to paddocks from the dairy
- River and road crossings or other "barriers" to voluntary movement
- Location of feedpad (if the system incorporates one)

AMS Leader Dr Kendra Kerrisk is achieving high levels of pasture utilisation with a robotic system.

Current AMS situation is summarized below:

- 120 cows milked with herd average milking frequency of 1.9 times/day.
- 35% idle time
- Average 21 L/cow/day with 60% late lactation cows; 10% early lactation.
- current diet: ~ 12 kg DM pasture; 8 kg DM fodder; 3.5 kg DM concentrate

The above summary was for the month of January 2008 with reduced numbers of cows in milk whilst the majority of Autumn calving cows were dry.

FutureDairy 2 update (cont)

Accurate pasture allocation within an AMS

Masters student, Daniel Dickeson, is well underway with his trial work investigating the impact of accurate vs. inaccurate pasture allocation within an AMS.

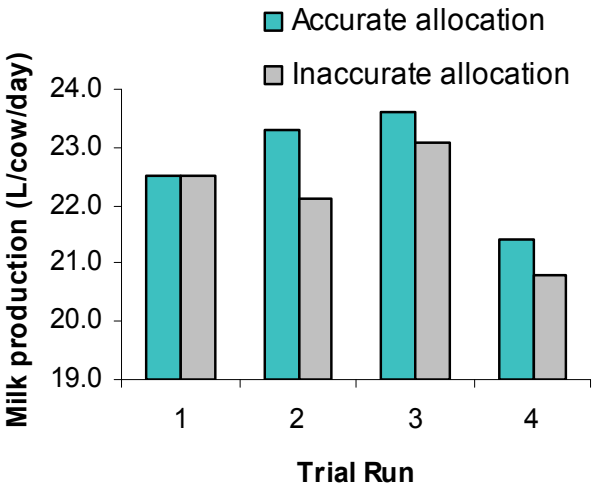
On most conventional dairy farms little attention is paid to accurate pasture allocations despite the work published by Prof. Bill Fulkerson indicating that large gains in productivity could be attributed to the practice.

On an AMS farm the most powerful incentive to encourage cow traffic (and therefore achieve target milking frequencies) is the depletion of feed within a paddock.

When the pasture in a give paddock is depleted the cows leave the paddock in search of a fresh allocation of pasture and by default can be drafted to the dairy for a milking. After milking the cow can then freely access the fresh pasture which motivated her to move around the system in the first place.

In addition to reduced pasture and supplementary feed wastage, accurate pasture allocation on an AMS farm is expected to result in higher and less variable milking frequency, a higher rate of voluntary visitation to the dairy and, as a result, higher milk production.

To date 4 grazing runs have been carried out. The above expectations are starting to show through in the data collected (see graph below).



The graph shows mean milk production (L/cow/day) achieved during 4 grazing runs comparing accurate and inaccurate pasture allocation within the pasture-based AMS research farm.

Picture shows a heifer in the AMS during the pre-calving training period.

"On an AMS farm the most powerful incentive to encourage cow traffic is the depletion of feed within a paddock"

Dairy Science teaching activities

The first renewed course of Dairy Production and Technology was offered in the second semester of 2008 coordinated by Assoc. Prof. Yani Garcia.

A dozen enthusiastic students enjoyed the system approach of the course as well as the visits to several local commercial farms.

In the photo, students look at the pasture guided by Ms Vicky Smart from DPI NSW.

Feedbase

The Feedbase component of FutureDairy 2 comprises 3 modules: Modelling, Field Research and On farm activities.

All modules are designed to work towards a common goal: developing new, highly productive sustainable complementary forage systems (CFS) through increased use of home-grown feed.

Modelling update

In Modelling, we are working in collaboration with other key Feedbase projects in Australia including Prof. Dave Chapman from University of Melbourne (Leader of 3030 project in Victoria), Dr Richard Rawsley from University of Tasmania - TIAR (Leader of 2012 project in Tassie) and Brendan Cullen also from Melbourne University (Science leader of modelling project Whole Farm Research Tools).

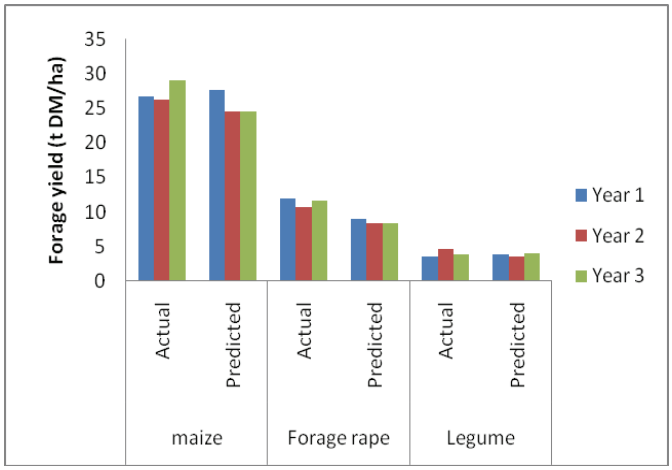
A workshop was organised by FutureDairy and held at Camden on 22-23 January with the above participants plus Dr Andrew Alford (DPI NSW), Dr Kithsiri Bandara Dassanayake (Melbourne University), Dr Rafiq Islam (new FutureDairy Research Fellow), Dr Dave Henry (Dairy Australia Feedbase Manager) and FutureDairy's project leader Assoc. Prof Yani Garcia. The whole workshop was to evaluate the capability of CSIRO model APSIM to simulate complex double and triple-crop forage rotations.

Climate data from different regions (Camden, SW Vic, Northern Vic and Tasmania) were used.

At Camden we simulated triple-crop rotations in a single paddock including maize for silage followed by a forage rape crop for grazing and either field pea for silage or persian clover for grazing during winter.

Preliminary results were very encouraging with realistic simulations being observed compared to experimental data from FutureDairy 1 (see graph).

Work in this area will continue with the ultimate goal of developing better tools to assess the impact of the change through incorporation of CFR technology.



An example of CFR simulation using APSIM. The graph shows actual (Garcia *et al* 2008) and predicted (APSIM) forage yield for a triple crop CFR comprising maize as a summer crop for silage; forage rape as a break crop in autumn; and a legume (field pea) for silage.

Field Research

Field research includes the Complementary Forage System (CFS) at Corstorphine as well as component research trials at Mayfarm.

The Corstorphine CFS study is in its second year and well on track to achieve excellent results.

The study comprises 100 Holstein-Friesian dairy cows managed on only 22 ha. This area is divided into a complementary forage rotation (CFR, 35% of total area) and a kikuyu-based

Maize plots with different Nitrogen level at Mayfarm. This project is led by Dr Rafiq Islam.

Sky dancers: an effective 'scare-crow' option for plot trials

International: Results from FutureDairy have been published in a prominent Spanish veterinary publication 'Albéitar'

FutureDairy 2 update (cont)

pasture oversown with short rotation Ryegrass (65% of total area).

In its first year, this system achieved nearly 35,000L of milk/ha of which nearly 30,000 L were produced exclusively from home-ggrown feed! This is between 3 to 5 times more than the national average. The study is part of Mr Santiago Farina's (pictured right) PhD project.

Current studies at MayFarm concentrate on forage evaluation .

Dr Ajantha Horadagoda, Dairy Science Group Laboratory Manager, is studying aspects of forage preference by grazing dairy cows.

Dr Rafiq Islam, new Research Fellow, is studying nutrient use efficiency (nitrogen and water) in Complementary Forage Rotations (CFR).

Preliminary results of both studies are shown separately in this Newsletter.

Santiago Farina monitors a high yielding forage rape crop at Corstorphine dairy farm

The plan is to have at least 2 or 3 additional farms in NSW and a similar number in Victoria.

Wayne Clark hosted a field day on his farm on 11 February with excellent results. "….probably the most encouraging response I've seen. Good questions and they want to come back when the brassicas are going so it will be interesting to see what happens…" said Wayne.

Katrina Sinclair from DPI NSW (Wollongbar) is participating in this project.

Project Leader Assoc. Prof. Yani Garcia met with DPI NSW extension officers in late February to align these activities with Dairy Pathways (dairy extension arm of DPI NSW).

Investors in the FutureDairy Project

DeLaval

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Delivering for the dairy industry

NSW DEPARTMENT OF PRIMARY INDUSTRIES

On farm activities

Activities on farm will comprise close monitoring of CFR on commercial farms. Currently we are only monitoring Wayne Clark's farm in Casino, NSW.

Wayne Clark and Katrina Sinclair (DPI NSW) at Wayne's dairy farm in Casino

The Dairy Research Foundation is on the Web! **www.vetsci.usyd.edu.au** (find under 'quicklinks')

The FutureDairy website can be located at **www.futuredairy.com.au**

Complementary Forage Rotation (CFR): a sustainable option

Two FutureDairy Masters students looked at the impact of CFR on the environment and found no evidence of any detrimental effects on soil characteristics and health.

A study of FutureDairy's Complementary Forage Rotation (CFR) has shown the system is environmentally sustainable.

Project leader, Assoc. Prof. Yani Garcia said the CFR is an intensive system, offering dairy farmers the opportunity to produce more home-grown feed than could be achieved from pasture alone. It may have benefits to dairy farmers with limited land and irrigation, particularly if grain-based concentrates become more expensive in the future.

Mr Pancha Shrestha completed his Masters degree looking at double crop CFR options and their impact on soil characteristics and health.

The CFR involves growing two or three crops on the same area of land within the one year, for example maize, forage rape and Persian clover. "The concept is to allocate inputs (e.g. nitrogen and water) effectively in a relatively small area, rather than scattered throughout the whole farm with reduced efficiency".

Annual yields from the CFR are over 40t dry matter per hectare, compared to a maximum of about 20t from the best managed perennial ryegrass pastures.

"We use crops that provide some level of complementarity to each other or the system. But being (the CFR) an intensive system, involving high inputs of fertiliser and water, we were particularly interested in its environmental impact," said Yani.

Over the last four years, FutureDairy conducted several studies to look into these issues.

Firstly, Mr Pancha Shrestha completed his Masters degree evaluating the impact of growing wholly grazable or wholly harvestable double- and triple crop CFRs on soil fertility, health (microbial activity) and pathogens build-up in the soil.

"Although this was done over only two years of continuous crop rotation and in small plots, the study found no evidence on any adverse effect of CFR on soil characteristics and soil health" said Yani.

In larger-scale study FutureDairy's Mr Bertin Kabore Master student monitored key indicators of soil health status and nutrient flows within the system over four seasons. "The study was particularly interesting because it involved two different soil types (clay-loam and heavy-clay (black)) and two contrasting rainfall years with ~400 and 1000 mm of rain" said Yani.

Mr Bertin Kabore monitored nutrient flows of a CFR in comparison to an intensively and an extensively managed pasture.

The data allowed Bertin to assess the likely impact on areas away from the CFR site and to determine nutrient and water use efficiency in comparison to both an intensively and extensively managed pasture controls.

The results showed no significant changes in soil organic matter due to treatments or any adverse effects of an intensively managed CFR. "The organic matter content of a soil is an indicator of its potential fertility and it can be dramatically reduced after a few years of continuing cropping" said Yani.

However this doesn't seem to happen with CFR, which involves crops (e.g. forage rape and legumes) that have beneficial properties to the soil.

There was a slightly higher soil loss (less than 0.016% of top soil) but this can be reduced by direct drilling maize.

Another concern is the amount of Chlorine which exceeded 1.5 t/ha in the dry year, but this was pretty much a consequence of the increase concentration of salt in the river water used for irrigation.

"The system requires high inputs. For example, nearly 500 kg N/ha were applied to the CFR and the intensively-managed pasture. But the efficiency of utilisation of this N was two times higher for the CFR (50 kg dry matter/kg of nitrogen applied) than for pasture due to increased forage yields."

"The loss of soil nutrient through run off was surprisingly low, even in a relatively wet year," said Yani.

Overall, these studies show that the increased intensification in home-grown feed through CFR system can be achieved without adverse effects on soil physical and chemical properties.

FutureDairy's on-going research is investigating the CFR on a larger scale, where it is being grown on 35% of the farm area, with the rest used for intensively managed kikuyu-based pasture over-sown with short rotation ryegrass each autumn.

What feed would dairy cows prefer?

Variety Sturt (fewer tendrils)

An ongoing study by the Future Dairy Group at May Farm has demonstrated that field peas can yield over 5t DM/ha in only 8 weeks when sown in late winter. However, it is common belief by farmers that cows don't like field peas. In response to this our study is evaluating cow preference for different types of field peas varying in the amount of tendrils and leaves.

The field peas evaluated included leafless and semi-leafless varieties with different amounts of tendrils (see photos). The studies have shown that cows prefer the high yielding semi-leaf varieties compared to the leafless types (see Figure 1). The tendrils in the leafless varieties had the tendency to create a "mesh" between plants making it difficult for cows to graze. However, cows grazed all varieties when they had no other no other choice.

Field peas have been primarily used to make silage but the current studies have shown that this plant could be used as a complementary grazing forage species in the pasture-based system of dairy farming.

Results clearly show that cows prefer to graze the variety Sturt with fewer tendrils, as prehension was much easier than the higher tendrils varieties. This preference was despite similar energy and protein content for all field pea types and even lower soluble carbohydrate (sugar) content for Sturt in comparison to the other peas (Table 1). This is probably due to a higher concentration of sugars in the stems than leaves and the relatively higher amount of leave material for Sturt compared to other semi leaf varieties.

In summary, forage preference by grazing dairy cows in this study was mainly related to morphological characters rather than chemical composition or nutritive value.

A knowledge of cows' preferences will be used as 'rewards' or 'attractions' for cows managed in voluntary automatic milking systems (AMS) where enticements to come to be milked are critical to its success.

Figure 1: Average time spent grazing (% of total) on each pea variety in a preference test with 10 cows.

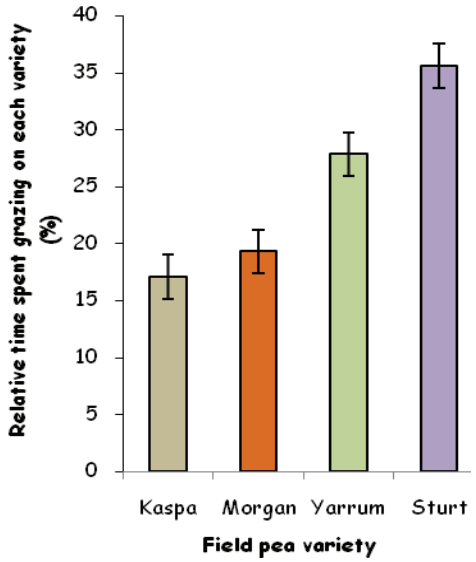

Table 1: Nutritive value of the field pea varieties tested in the preference test

	Neutral Detergent Fibre	Acid Detergent Fibre	Water soluble carbohydrates	Crude Protein	Metabolisable Energy
	% of dry matter				MJ/kg dry matter
Kasper	32	27	8.8	23.7	10.1
Morgan	35	31	11.6	21.9	9.9
Sturt	31	29	6.9	23.7	10.2
Yarrum	29	27	10.2	22.5	10.5

Do you have a question? Please contact the Dairy Research Foundation at:

02 9351 1631

or email

Michelle Heward at:

mhew3719@usyd.edu.au

Variety Kaspa (more tendrils)

Yerba Mate - an alternative to chemical additives?

A series of trials are investigating the effects of Yerba Mate (*Ilex paraguariensis*) supplementation on dairy cows' productive performances.

Background

The animal feed industry is under increasing consumer pressure to reduce the use of antibiotics as feed additives. This is a natural consequence of the increasing demand of safe products for human consumption.

The use of herbs as additives in livestock nutrition, as an alternative to other chemical compounds, is becoming a new goal in livestock production.

This research proposal is based around this increasing demand for animal products that are green, clean and ethical. For dairy producers, this means moving into new and alternative practices that do not involve the chemical or hormonal treatments of animals.

These practices should also take into consideration the welfare of the animals. It has been found that the consumption of Yerba Mate significantly contributes to the overall antioxidant intake with biological effects potentially beneficial for human health. Antioxidants can enhance different aspects of cellular and non-cellular immunity.

Optimal blood concentrations of antioxidants may be greater during periods of stress, such as parturition. The peripartum period is important for health and reproduction in cows. The use of alternative feedstuff like Yerba Mate, in ruminant nutrition represents a novel management tool that is green, clean, ethical and extremely easy to use.

However, the effect of Yerba Mate supplementation in ruminants has not yet been studied and thus, the role and the activity of natural antioxidants not commonly present in the diets of ruminants warrants investigation.

Aim

The aim of this study is to evaluate the effects of antioxidant supplementation on the productive performances of dairy cows and their calves. This is through recognising the need for the animal industries to continue finding new consumer-safe and environmentally friendly feed products.

This study will establish the effect of yerba mate supplementation on productive performance of dairy cattle. This research proposal asks some questions relevant to the productive biology of dairy cows and the findings of this study may have the potential to be applicable to the dairy industries and will give useful information to improve the management of dairy cattle.

Laboratory work is currently being undertaken by the Dairy Research Group; we hope to provide some preliminary results in the next newsletter. If you wish to receive more information please contact Dr Pietro Celi (pietroc@camden.usyd.edu.au – 9351 1782).

Dr Pietro Celi

Lecturer in Ruminant Production and Health

'FREE' System - helping to combat oxidative stress

The Dairy Science Group has recently acquired the FREE (Free Radical Elective Evaluator) System obtained through a Honda Foundation grant.

This is an integrated analytical system consisting of a photometer and a mini-centrifuge and a number of tools (microipipettes, tips, tubes etc.), that is able to carry out any chemical analyses based on the principles of spectrophotometry (haemoglobin, glucose, cholesterol, triglycerides, bilirubin, lactic acid, lipase, GOT/AST, GPT/ALT, albumin, total protein, urea, creatinine, alkaline phosphatase, uric acid, amylase, γ-GT, calcium, iron, magnesium, potassium, phosphorus, chlorides) and, particularly, the whole panel of oxidative stress tests (d-ROMs, SH groups, OXY adsorbent, BAP) in blood, plasma/serum, tissues biopsies, cell cultures and respiratory condensate.

Oxidative stress is involved in several conditions that are relevant for animal production and welfare (pneumonia, enteritis, mastitis, endometritis, sepsis, postpartum disorders, such as retained placenta, milk fever, mastitis and infertility in cattle and pigs; recurrent airway obstruction (RAO), exercise-induced pulmonary haemorrhage (EIPH), racing induced oxidative stress, laminitis, arthritis and intestinal strangulation in horses; rheumatoid arthritis, cancer, cardiovascular disease, kidney disease and cataracts in dogs and cats). If you need more information please contact Pietro Celi (pietroc@camden.usyd.edu.au – 9351 1782).

Current study: legume options for grazing during summer

An issue commonly raised by farmers visiting Future Dairy has been the need of an alternative summer grazing option to maize. Some farmers just don't have the equipment to grow maize nor do they want to have a fodder crop growing on paddocks close to the dairy. In addition, any grazing option during summer must complement the relatively lower quality of C4 summer pastures, (kikuyu or paspalum).

With these factors in mind, we are currently investigating forage yield, quality and grazing preference by dairy cows of 3 summer legumes: soybean, lab lab and cowpeas. The evaluations are carried out at 4 different stages of maturity.

"One problem with these evaluations is the need for a reference point. For instance, soybean can be preferred by cows in relation to lab lab or cowpea, but we don't know how it would compare to (e.g.) a "ryegrass white clover pasture" said Dr Horadagoda. This is why in the future we will include white clover as a control species, following a suggestion by Professor David Chapman, a forage and dairy expert from Melbourne University who recently visited Future-Dairy. White clover is a good reference species for cows' preference studies as it grows all year round under irrigation, maintains its nutritive value even during the summer and it is very palatable.

Results from this study will be presented in the June edition of this Newsletter.

Please contact us or send us your feedback before the next Newsletter which is due to be distributed in June 2009

Postgraduate Student updates

Ravneet Jhajj

As a part of my project which aims to improve efficiency of feed utilisation by feeding contrasting diets, a new 'tool' to monitor rumen function (rumen pH, temperature and pressure) has been tested.

This new tool is a rumen probe (Kahne, New Zealand) that is inserted into the rumen of an animal and continuous data measurements can be taken.

The probes were evaluated and compared with manual sampling methods under a wide range of ruminal conditions in rumen-fistulated sheep.

The study resulted in a minor level of agreement between the two methods. Due to the limitations of upward pH drift, this new technology needs further advancement before being used in farm animals.

Santiago Farina

We are getting very promising results from the first year of the Whole Farm Study at Corstorphine Farm.

The use of a Complementary Forage System let us achieve over 32,000 L/ha from a diet based on 82% of feed grown on-farm.

We are now in the second year of this study run until April 2009, with hopefully very similar results. In this second year, we are also studying the implications of the use of this intensive forage system on key parameters related to environmental sustainability such as Nutrients Balance.

PhD student Santiago Farina in the field

PhD student Ravneet Kaur Jhajj

For further information please contact us on 02 9351 1631 or as follows:

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