



NewsLetter No: 3 April 2004

**HOT NEWS:** Opening of new whole cow calorimeters for collecting and measuring methane emissions at DPI Ellinbank in Victoria – Spring 2004 – New exciting research – Watch this space for more info

## **Hello everyone and welcome to our third newsletter!**

by Richard Eckard, GIA Project Leader

Our research teams have been pretty busy over the last quarter with the DPI Ellinbank research site now in the middle of building brand new Methane Calorimeters—if you've ever wondered what they are, we've slipped in a snapshot of an older European cousin plus some info.

I would also like to introduce you to our new team member—Traci Griffin. Traci now leads the "E3 Partnerships, Communication and Education" in Agriculture project and will be based at DPI Rutherglen—more info below.

In the meantime ... enjoy the read.



*Richard Eckard*



## **Climate Change Module**

By Adam Hood, DPI Werribee

The team was recently approached by the Australian Greenhouse Office (AGO) to provide information about its latest work, mapping the potential future impacts of climate change on key agricultural industries. The AGO is keen to publish and promote this work to key industries right across Australia. Climate Change research work is somewhat different to the emissions work currently being funded by the CRC and AGO, however the 'pow wow' has proved to be a top opportunity for the team to exchange information and skills across the Australian continent.

For background Information on this module, see the previous newsletters on our web site.

## **Project F1: Grains Nitrous Oxide Module – Rutherglen**

by Fiona Barker-Reid, DPI Rutherglen

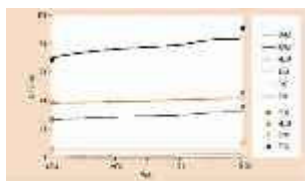
Notwithstanding Christmas and as the team anticipated, December was a busy month with the very late rains and a delayed harvest. The past few months have seen a bunch of changes at the Rutherglen experimental site. All equipment was removed from the site to permit the harvester onto the plots and it also provided the timely opportunity to commission and install six new nitrous oxide



*New automatic chambers at Rutherglen*

collection chambers on the plots. The new improved chambers will provide the research team with greater computer programming capacity, bigger memory plus an automated selfwatering system. The latter bit means that when it's raining that the water will be transferred to the covered plots in real time—previously, there was often a delay between the rainfall event and application of rainwater to the covered plots.

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*Graph of soil carbon change over years under different stocking rates at the site (Skjemstad and Spoucer 2003)*

## Project F1: Carbon Sequestration Module – Hamilton

By John Graham, DPI Hamilton

Under the current greenhouse debate, the environmental media bone is being pointed at carbon as the biggest culprit in the greenhouse equation and with it the term 'carbon sequestration' has arisen as a possible solution. In this vein, a new project examining the effects of pasture management on carbon sequestration – the amount of carbon being locked up in soils – has just started at DPI Hamilton. Led by John Graham, this new project will measure soil carbon and carbon sequestration of the fertilizer and stocking rate treatments at the Long Term Phosphate Experiment in Hamilton. The project team also includes Fiona Robertson and Fiona Cameron and this Module is funded by the Meat and Livestock Australia, the Victorian Dept of Primary Industries' Wool and Meat Strategy, and the CRC for Greenhouse Accounting.

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## Project F1: Dairy Nitrous Oxide Module, Kyabram

by Kevin Kelly and Frances Phillips, DPI Kyabram

This team's currently in the process of finalising the characterisation of the site—ie soil chemistry and the soil's physical attributes. Then for the next couple of months, it's 'nose to the grindstone' with data handling for the team! Frances Philips is currently working her way through 6-months worth of data from the micro-met system (see picture). This will be followed by a comparison of the micro-met and the enclosure chambers methods.

At present, the experimental site is also being used by Deli Chen, Tom Denmead and Deb Turner (both of the F1 project of the CRC) who are measuring ammonia loss from urine and fertiliser at the site.

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*The Micro-met system at Kyabram*

## Project F1: Methane Module

By Martin Auldish and Bruce Knee, DPI Ellinbank and



*Photo of the new methane chambers at Ellinbank*

## Hamilton

The aim of the Methane Project is to determine emissions from beef and dairy cattle grazing pasture during the four seasons of the year. DPI Hamilton and DPI Ellinbank have just completed their spring and summer methane collections from beef and dairy cattle respectively. These data will be used to make more accurate calculations of greenhouse emissions and may provide ideas for abatement measures for the two industries.

After some significant refinements, the SF6 technique on dairy cows has been working really well. The next run of measurements are scheduled for May.

Calorimeters ... you've heard the term, but what are they?

Calorimeters are basically sealed rooms—big enough to accommodate a whole cow!—where variables such as quantity of air pumped through plus the amount of methane and carbon dioxide breathed out by the cow can be measured over a set period of time.

When experiments are in progress, the cow is fed, watered and milked whilst inside the sealed room. There are windows on the calorimeters so that the cows can see each other and DPI scientists are hoping to use calorimeters as a means of testing and comparing the accuracy of both the SF6 and calorimeter measurement method (see pictures).

In Victoria, 40% of all agricultural methane emissions are from dairy cattle with beef and sheep contributing 30% each. Methane is a potent energy form— so the methane project team is focussing on ways to lessen enteric methane losses across a range of pasture grazing systems.

The calorimeters will be used to help gather data so the team can find ways of minimising those energy losses and converting them across to more milk, meat and wool production. The new calorimeters will open up new collaborative opportunities and discussions are currently being held with research teams in New Zealand to develop these plans further. The Calorimeters are due to be completed and calibrated by July 2004.

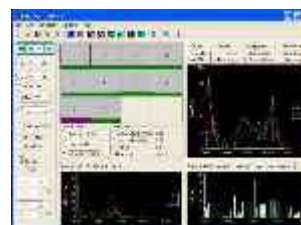
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## Project F2: Farming systems to reduce non-CO2 greenhouse gas emissions

by Richard Eckard, Project Leader

Daniel Rodriguez has now completed a review of all computer models that have the capacity to predict nitrous oxide emissions from cropping and grazing systems in Australia. This review is being circulated within the team for comment before being published.

Yong Li of the F2 team has set up a database structure to store our data, using an internationally standard format, so that our datasets can be shared with other teams around the world. This format will also allow us to compare a number of models using the same datasets. We now have three historical datasets in this new format; Richard Eckard's Dairy grazing system at Ellinbank, Peter



*Screen shot of the DairyMod model*

Grace's cropping dataset from Mexico, and Deli Chen's cropping dataset from their work on the North China Plain. These standard datasets will be used to compare the selected models, and will be presented at a workshop in June - the ultimate goal being to evaluate new BMPs.

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*Traci Griffin inspects a new automatic chamber at the Rutherglen site*

## **Project E3: Partnerships, Education & Communications in**

Traci Griffin, Project E3 leader

Meet our new Project Leader, Traci Griffin ...

"Hello there! It's a pleasure for me to accept the position of Project Leader of Partnerships, Education and Communications and to become a part of such a great team! By way of brief background, I've come to the CRC after working for three years with the Indigenous Lands Corporation (ILC) in Brisbane. My role with the ILC covered both New South Wales and Queensland and involved running capacity building projects with indigenous groups, as well as land management of indigenous-held properties.

My new role as Leader of Partnerships, Education and Communication has provided me with a great opportunity to get back into the mainstream agriculture and extension scene, and particularly within the 4 main industries that the Non-CO2 program is concerned with.

I'm really impressed with the pro-active approach taken by the CRC to ensure that science is developed in a relevant and useful way to industry. This approach is better than things have been done in the past, and it significantly improves the chances of our work being adopted. I see most of my job as being about feedback and maintaining the connection between industry and research.

The issues and research that we're dealing with demand that all stakeholders take a pro-active approach – industry will get as much out of the research as they put in."

Traci sits within the Department of Primary Industries' Catchment & Agriculture Services Practice Change team and is located at DPI Rutherglen. She has a national role serving mainly the Dairy, Grains and Cotton industries and has also been meeting and familiarising herself with all our project stakeholders. The project is planning to use the LandCare network as part of information roll-out for projects as well as interacting with Environment Management System (EMS) developments to ensure that we are a reliable source of Greenhouse information for LandCare members.

**E3: Evaluation & Communication module**

The team has been promoted through such public events such as Sheepvention at Hamilton; Community Open Days at Hamilton and Ellinbank, and the Victorian Beef Expo. A number of radio interviews, science seminars and various articles about GCCA projects have also been promoted in the last quarter. Overall, monitoring activities indicate that all project activities are running according to plan and that various members of the team are being regularly consulted as expert informants—this reflects positively on the work of the team.

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