



NewsLetter No: 6 December 2005

In this Issue:

- * *International workshop at DPI Ellinbank tackles burping Cows*
- * *News from the site at Cunderdin, Western Australia*
- * *Welcome our two Canadian visitors to the Methane Team*
- * *International Symposium on Non-CO2 Greenhouse Gases*

Introduction by the Program Leader

Richard Eckard

It is now almost six months since our last newsletter and much has changed in that time. Our nitrous oxide measurement sites at Rutherglen (winter wheat) and Griffith (maize) have completed their field work and are writing up and communicating the results. The nitrous oxide site at Kyabram (dairy pasture) is due to complete its field measurements at the end of this summer season.

Scientists from the team have been presenting the results at a number of conferences, including:

- * 17th International Clean Air Environment Conference in Hobart, in May 2005.
- * 4th International Symposium on Non-CO2 Greenhouse Gases, Utrecht, The Netherlands, in July 2005.
- * The 2nd International Conference on Greenhouse and Animal Agriculture, Zurich, Switzerland in September 2005.

We also welcome Don Shaw to the GIA team. Don will be managing the evaluation of the Victorian DPI aspects of the GIA program.

The CRC for Greenhouse Accounting is due to wind up in July 2006. However, there are also a number of new projects being developed in collaboration with the Australian Greenhouse Office and these will be profiled in future newsletters as soon as they are finalised.



The Open Path FTIR (left) and Laser (right) systems measuring methane from groups of cows at Ellinbank.



The team of scientists that recently met at Ellinbank.

International workshop at Ellinbank tackles burping cows

Richard Eckard and Chris Grainger

What do nine New Zealanders, four Canadians and five Australian researchers have in common? Answer – a common interest in reducing the energy lost from cows as methane, resulting in more milk production.

Eighteen researchers met at DPI Ellinbank in early November 2005 to workshop improved improvements to our methods for measuring methane in the field. The delegates at the workshop represent some of the leading researchers in the world in methane research.

Methane is a potent greenhouse gas produced by microbes in the cow's rumen and is released to the atmosphere by cows burping or breathing. It accounts for 64% of the greenhouse gases produced by the agriculture sector in Australia.

The best method at present for measuring methane from cows in the field involves using a tracer gas known as sulphur hexafluoride (SF₆). The focus of the workshop was to pool the collective knowledge of the researchers to further improve this SF₆ method.

The significance of this workshop is that researchers from all three countries agreed to work together, pooling their collective expertise, to address the issues identified. We now envisage a number of new projects being developed to reduce methane losses while improving production efficiency.

New GIA project at Cunderdin in Western Australia

Louise Barton, UWA

This new site at Cunderdin in Western Australia, is measuring nitrous oxide emissions from winter wheat in response to nitrogen fertiliser inputs.

The Cunderdin site was harvested on the 30th November 2005, and the research team is looking forward to a warm, dry summer!

Nitrous oxide emissions have been low (less than 0–220 ng N /m/h; median 0.5 ng N /m/h) since measurements commenced in May 2005, with larger losses occurring in the latter half of the growing season and coinciding with late rains and warming soil temperatures.

Dr Deirdre Gleeson, The University of Western Australia, has recently been appointed to lead a new research project investigating factors regulating the temporal variation in nitrous oxide emissions from cropped soils in Western Australia, including the Cunderdin site. Dr Gleeson's project is funded by the Australian Research Council in partnership with the Department of Agriculture Western Australia (DAWA).

Modelling efforts are underway with Yong Li and Deli Chen, of the University of Melbourne, together with Louise Barton, investigating the suitability of the 'Water and Nitrogen Management Model (WNMM)' for predicting nitrous oxide emissions at the Cunderdin site.

Preliminary simulations were in reasonably good agreement with measured data from the Western Australian field site. Soil water and temperature were well predicted, explaining up to 90% of the variation in nitrous oxide emissions. This will give the team confidence in using the model to extend the findings from this site to other soils and regions.

A field day was held on site in October 2005 attended by representatives from the Australian Greenhouse Office (AGO), The Grains Research Development Corporation, and DAWA.



The Western Australian field site at Cunderdin Agricultural College, July 2005



*Drs Sean McGinn and
Karen Beauchemin*

Canadian Scientists join the GIA methane team

Richard Eckard

We are privileged to have Sean McGinn and Karen Beauchemin working with the GIA methane team, base out of DPI Ellinbank, Victoria for the next 12 months. Sean and Karen work for Agriculture and Agri-Food Canada at their Lethbridge Research Centre in Alberta and are on a 12 month scientific exchange.

Sean specialises in Agricultural Meteorology and will be assisting the Ellinbank methane team in calibrating the new Open Circuit Respiration Chambers, comparing the SF6 and chamber methods, as well as working on Open Path Laser and FTIR methods for measuring methane from grazing cattle in the field, respectively.

Karen specialises in the nutrition of dairy and feedlot cattle and has worked extensively on methane and ammonia emissions from cattle. Karen will be working on dietary supplements for methane abatement with the team at Ellinbank and AgResearch and Dexcel, New Zealand.

For further information on Sean and Karen, see their respective web sites at:

Sean - http://res2.agr.ca/lethbridge/scitech/mcginn_e.htm

Karen - http://res2.agr.ca/lethbridge/scitech/beauchemin_e.htm

International Symposium on Non-CO2 Greenhouse Gases

Fiona Barker-Reid

In July 2005, Ian Galbally, Fiona Barker-Reid, Louise Barton, Deli Chen and Tom Denmead attended the 4th International Symposium on Non-CO2 Greenhouse Gases: Science, Control, Policy and Implementation in Utrecht, the Netherlands.

Team members provided five presentations of research results and displayed a number of posters from their work associated with the GIA program.

Feedback from other delegates was very positive, with presentations attracting quite a number of questions from the floor.

The conference itself was an excellent event, bringing together many of the 'big-wigs' of the international greenhouse world. Some of the team spent a day with Dr Lex Bouman, an eminent greenhouse emissions scientist from the National Institute for Public Health and the Environment (RIVM), who kindly provided a tour of a number of local research projects in the RVIM and Wageningen University.

For more information, see the conference website at:
www.ncgg4.nl



Deli Chen, Fiona Barker-Reid and Tom Denmead