### LIVESTOCK RESEARCH GROUP

# newsletter





# Welcome from the Co-Chairs

### It was wonderful to see so many of you recently in Dublin, Ireland.

The combination of the 2013 GGAA conference, the pre-conference science workshops (on methane and nitrous oxide measurement techniques), five LRG research network meetings, a meeting with the Sustainable Agriculture Initiative (SAI) Platform and the annual LRG meeting meant that Dublin was packed with agricultural greenhouse gas researchers for a week at the end of June. The opportunity for rigorous discussion, the development of new collaborations and the renewing of old friendships over a pint or two of Guinness was greatly appreciated.

This issue of the LRG newsletter focuses on many of the meetings that occurred in Dublin, and the discussions and opportunities arising from them. There is a report from the first meeting between members of the LRG and SAI Platform, which outlines what the SAI is and the actions that were agreed by the two groups over the course of the day (see page 7). There are two articles covering the GGAA preconference workshops; written by Dr Keith Lassey and Dr Mike Harvey who were invited to present about the international multi-authored technical manuals on the SF6 tracer technique and  $N_2$ 0 chamber methods (see pages 4 and 5). The update from the research networks details the discussions that occurred during the annual meetings including any agreed priority actions and research collaborations; three of the research networks announced new leaders in Dublin and their details are included on pages 8 and 9.

In addition there are detailed reports from the successful LRG meeting (see page 2 and 3) and the Alliance council meeting that took place in Uruguay immediately prior to Dublin (page 6).

Enjoy reading,

**Martin and Harry** 

## Free access to GGAA full papers

Invited speakers at the recent GGAA meeting in Dublin gave an impressive overview of many aspects of greenhouse gas emissions from livestock systems across the world. Twenty-three of the invited papers have been published as a Special Supplement of animal that was made available to delegates at the conference on a USB drive.

Online access to these papers is free until 30 October 2013.

Simply follow this link (http://journals.cambridge.org/trial) and when prompted insert trial code: ANMLRG



## Update from the Livestock Research Group meeting

### University College Dublin, Ireland on Friday 28 and Saturday 29 June 2013

The fifth meeting of the LRG was attended by representatives from 24 member countries (Argentina, Brazil, Chile, Canada, Colombia, Denmark, Finland, France, Germany, Indonesia, Ireland, Italy, Japan, Malaysia, Mexico, The Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, United States of America, Uruguay, Vietnam) and eight organisations (AnimalChange, The European Commission (EC), UN Food and Agriculture Organisation (FAO), Global Agenda for Action on Sustainable Livestock Development, FONTAGRO/Inter-American Development Bank, International Livestock Research Institute (ILRI), European Union Joint Programming Initiative on Food Security, Agriculture and Climate Change (FACCE-JPI), Sustainable Agriculture Initiative (SAI) platform).

The meeting reviewed the group's work plan and agreed on a range of new work items, in many cases building on ideas and proposals developed during workshops and network meetings held earlier in the week.

### Key points from the review of current activities

The country round table provided a chance to share the many different projects ongoing in LRG member countries and explore the opportunities for further research, collaboration, networking, and problem sharing. Of particular interest is the amount of new research funding being made available within the member countries for projects that support the objectives of the Alliance (see final report for more details).



Network coordinators dinner: From L-R Victoria Hatton, Michael Kruetzer, Deb Knox, Andre Bannick, Adrian Cookson, Harry Clark, Yvette de Haas, Martin Scholten, Hutton Oddy, Andy Reisinger, Jac Meijs, Grant Shackell, Jan Dijkstra and Theun Vellinga.

The coordinators of the research networks met for dinner after the GGAA conference, in what is hoped to become a routine interaction between the networks. Their overlapping and synergistic roles in reducing emissions intensity of livestock systems means they have many ideas to exchange and can offer support to each other and share lessons learnt.

The Climate and Clean Air Coalition (CCAC) are extending their work on reducing methane emissions to include the agriculture sector. The Manure Management Network of the LRG has been developing a global project proposal to submit to the CCAC for funding to establish Manure Management Knowledge Hubs in South America, Asia and Africa. The project will bring together scientists from the network and the FAO's Global Agenda for Action Livestock Dialogue.

The internationally multi-authored technical manual explaining the SF6 tracer technique will be available on the Alliance website in late 2013; it is currently undergoing peer review. An overview presentation of the process for the manual was given during the GGAA 2013 pre-conference methane measurement workshop held at AFBI, Hillsborough, Northern Ireland (see page 5 for further details).

The FONTAGRO fund is calling for proposals with a climate change focus in 2013, and is continuing to develop specific projects in collaboration with the private sector and governments from outside Latin America.

#### Key new areas for future action:

The LRG agreed to establish the Grasslands Research Network, bringing the total number of research networks to six (see page 8 and 9 for updates from the networks). It was proposed that the Grasslands Research



LRG member country representatives – Dublin 2013

Network coordinate a collaborative research proposal from the LRG members to the FONTAGRO fund focusing on understanding and managing soil carbon in pasture and rangelands in Latin America. The Grasslands Research Network will also be the key contact for the LRG with the Soil C/N Cycling Cross-Cutting Group of the Alliance in a collaboration to compare models for soil C and N changes under different mitigation strategies in grasslands.

The LRG will collaborate with the FAO to help it refine and further develop its GLEAM model (see back page for more information about GLEAM), by providing and coordinating regional groups of experts to assess the validity and applicability of packages of mitigation measures indicated by the model. This collaboration offers to be an important opportunity for the LRG to foster links with and support policy-relevant international organisations. Building on a stimulating presentation by the Irish hosts of the LRG meeting, an expert group will also be established for the exchange and support of marginal abatement cost curve information and reviews. A new page will be created on the Alliance website as a hub to link and share information.

Extending recent capability building activities, an engagement workshop will be held in Poland in early 2014 for Central and Eastern European scientists and policy advisers, organised by the Netherlands with New Zealand support.

Following from the meeting between the LRG and the SAI Platform (see page 7 for full details) it was agreed that the LRG will support the SAI platform by outlining current research programmes and their likely timelines and maturity, to facilitate better awareness and timely engagement by industry. The Co-Chairs will coordinate this initial activity and will maintain and seek to increase dialogue with the SAI Platform on further interactions.

A full updated work plan of the LRG will shortly be circulated to LRG members and then made available on the LRG website (www.globalresearchalliance.org).

The sixth meeting of the LRG will be held in Indonesia in the margins of the AAAP congress in Yogyakarta, Indonesia 10-14 November, 2014 (www.aaap2014.ugm.ac.id). Further details about the meeting will be confirmed at a later date.

# Launch of the "Nitrous oxide Chamber Methodology Guidelines"

The initial idea for a "Nitrous oxide Chamber Methodology Guidelines" was developed following a workshop at the Greenhouse Gases and Animal Agriculture Conference (GGAA-2010) in Banff, Canada, in October 2010.

The Livestock Research Group of the Global Research Alliance supported this endeavor as a priority project. It was seen as a valuable technical activity that is of potential benefit to the entire global research community. The basic manual chamber is low cost hardware but requires that certain methods are followed to ensure accurate and reliable results.

A major aim has been to set minimum standards for measurement and hence facilitate improved quality and intercomparibility of emissions and emission factor data globally as well as identify key areas for future improvement.

The production timetable for the Guidelines was:

May 2011: Key authors meeting: for development of extended outline for AgResearch, Lincoln, N.Z.

Apr 2012: Full draft developed

Jun 2012: 2nd Key Authors meeting at 17th International Nitrogen Workshop, Wexford, Eire.

**Sep –Oct 2012:** Peer review feedback on Guidelines and lead author response

Dec 2012 – Jan 2013: NZAGRC review and final proofing

May 2013: Publication online and freely available under the under Alliance



technical information and knowledge hub http://www.globalresearchalliance.org/ research/livestock/activities/knowledge/ as: de Klein, C.A.M., Harvey, M.J., eds (2013) Nitrous Oxide Chamber Methodology Guidelines. Ministry of Primary Industries, Wellington, N.Z. ISBN: 978-0-478-40584-2 (print), 978-0-478-40585-9 (online)

Jun 2013: Guidelines launch at GGAA-2013, Dublin, Ireland

Taking advantage of the large gathering of agricultural greenhouse gas researchers during the GGAA 2013 conference, a number of activities were planned to promote and raise awareness of the guidelines, including:

- a presentation of the guidelines at the workshop on Techniques for Measuring GHG from Soil and Manure, held in the margins of the GGAA 2013 conference
- distribution of guidelines through handout of softcopy on USB sticks

- advertising at the NZAGRC promotional stand at GGAA 2013
- an oral paper at the main conference given by Cecile de Klein: de Klein, C.A.M., Harvey, M.J., Alfaro, M.A., Chadwick, D.R., Clough, T.J., Grace, P., Kelliher, F.M., Rochette, P., Venterea, R.T. (2013). A common protocol for measuring N<sub>2</sub>O fluxes using chamber methods. Advances in Animal Biosciences 4, 2, 283. Proceedings of the 5th Greenhouse Gases and Animal Agriculture Conference (GGAA2013) 23-26 June, Dublin Ireland.

#### The launch of the guidelines at the workshop on Techniques for Measuring GHG from Soil and Manure

Mike Harvey (NIWA, New Zealand) was invited to launch the guidelines at the preconference workshop on Techniques for Measuring GHG from Soil and Manure held on an experimental farm about 30 km west of Dublin. His presentation stimulated good discussion across the measurement community present at the workshop. Key points included:

- Recognition of the benefit of having standardised guidelines and on identifying the un-resolved "evolving" issues
- Discussion of uncertainty: one of the main areas for discussion was around assessment of uncertainty from individual chambers, treatments and treatment sets within designed chamber experiments and how best to deploy limited resources to get best accuracy and uncertainty estimates from these experiments.

 Discussion with the micrometeorological community regarding the value of discrete chamber sampling versus continuous measurement. There are strengths and weaknesses and therefore complementary aspects to both approaches; some bridging can be provided by a higher measurement frequency from auto-chambers – read the guidelines for further detail on this.

#### **Future Plans:**

There is desire from the research community for the guidelines to be available longterm with an enduring reference but also to be revised as required in the light of new knowledge. A number of 'evolving issues' are flagged in various chapters for issues where there is no current general consensus on methods or treatments. Some specific areas likely to evolve in the coming few years include the further development of automation and treatment of experimental uncertainty.

Future steps will need resourcing but proposed topics include:

- Options for getting guidelines published in peer reviewed journal: discussions are underway with the N.Z. Journal of Agricultural Research.
- Design of optimal sampling strategies: ensuring accurate chamber measurements is one thing, but knowing when and where to put chambers in the first place is another. A draft proposal to address this issue of optimal sampling strategies to minimise

uncertainties within overall operational constraints has been developed by Chadwick et al., and this has been passed on to relevant LRG national representatives (UK and NZ) in order to gauge interest and options to support such work.

- Establish an "N<sub>2</sub>O chamber measurement wiki" site to collate emerging knowledge – suggestions and additions.
- Revision of guidelines as required for additional points, which will require some modest funding and commitment to realise - the aim is to capture advances in understanding and best practice. See the "Evolving Issues" section of the guidelines.

The editors of the guidelines would like to take this opportunity to acknowledge and thank the Institutions and Governments that supported all the international researchers and editors involved in the publication, to thank the Livestock Research Group of the Global Research Alliance who promoted the international co-operation that made the production of these guidelines possible.





Top left: Scientist's en-route to the bio-digester on the back of the farm tractor. Bottom left: 'Hands-on' experience with the SF6 tracer technique tools. Bottom right: Getting dressed into bio-hazard suits outside the AFBI main building during a break in the rain.

### GGAA pre-conference Workshop on methane emissions

Hillsborough, Northern Ireland Saturday 22 June 2013

Seventy five scientists from 18 countries braved the cold, wet Northern Irish summer to attend the pre-conference workshop on "Measurement techniques for methane emissions and use of methane energy" held at the Agri-Food and Biosciences Institute (AFBI) at Hillsborough, Co Down, Northern Ireland.

AFBI, created in 2006, is a leading provider of scientific research and services to government, non-governmental and commercial organisations. It has a unique breadth of facilities and scientific capability in agriculture, animal health, food, environment, biosciences and economics. AFBI research covers both GHG emissions from agriculture and the positive role farming systems can play in terms of carbon sequestration and renewable energy production. Over recent years AFBI has been at the forefront of research on measuring GHG emissions from cattle and sheep and it was the on-going work on methane that was the focus of the Hillsborough workshop.

The workshop programme included presentations and site visits. The presentations provided an opportunity to learn about the research activities underway at AFBI. AFBI research

is providing information and tools to monitor GHG emissions more accurately and to enable the identification of appropriate mitigation strategies at national and individual farm level. The workshop also received a presentation about the forthcoming publication of the "SF6 tracer technique guidelines". This is an international multi-authored technical manual that describes the SF6 tracer technique to determine methane emission rates from individual ruminant animals. The manual is due to be published in late 2013; details can be found on the LRG pages of the Alliance website (www.globalresearchalliance.org).

For the second half of the programme, groups of scientists dressed in bio-hazard suits and tried to keep dry and warm as they were rotated through the AFBI facilities. Guided tours of the calorimetry chambers, the gas analysis laboratory, large anaerobic digesters and the renewable energy centre provided an opportunity to see the leading-edge work being undertaken by AFBI. More practical sessions allowed the scientists to get 'hands-on' with the tools involved in applying the SF6 tracer technique.

### The Council of the Global Research Alliance meets for the third time

### The meeting of the Alliance Council took place in Montevideo, Uruguay, 18 -19th June 2013.

Government representatives from 19 Member countries were able to attend the meeting (Argentina, Brazil, Canada, Chile, China, France, Indonesia, Japan, Mexico, The Netherlands, New Zealand, Norway, Peru, Spain, Switzerland, Thailand, USA, Uruguay, Vietnam). Invited Partners that were able to attend were the UN Food and Agriculture Organisation (FAO) and the Inter-American Institute for Cooperation in Agriculture (IICA) - through a representative of PROCISUR. The meeting was opened by Uruguayan Minister of Livestock Agriculture and Fisheries Mr Tabaré Aguerre and Minister of Housing, Planning and Environment Mr Francisco Beltrame. The World Farmers Organisation was also invited as key speaker.

The Research and Cross-Cutting Group Co-Chairs presented to the Council an update of their groups' activities over the last 12 months. Their coordinated power point presentation is available in the member's area of Alliance website <u>www.globalresearchalliance.org</u>. After an overview of the Groups by Martin Scholten, the Co-Chairs of each Group provided a summary of its work plan and activities to date<sup>1</sup>. The presentation concluded by Martin summarising the common challenges that



Research Group co-chairs attending the Council meeting (L-R Kazuyuki Yagi, Martin Scholten, Jan Verhagen, Harry Clark, Brian McConkey and Alan Franzleubers).

are faced by the research groups as follows:

- Resourcing the ambition: seed money for initiation of collaborative actions based on existing national programmes
- Resourcing the function of the Research Groups: time and support for co-chairs, participation
- Specific funding initiatives eg FACCE JPI
- Increasing commitment from existing members
- Expanding membership
- Mobilise partners to support scaling up of activities.



Government representatives of the 19 countries attending the Alliance Council meeting in Montevideo, Uruguay.

Outcomes from the meeting were:

- Uruguay confirmed as the new Chair of the Alliance Council
- Netherlands confirmed as the next Vice-Chair. The Netherlands will be responsible for hosting the next meeting of the Council in June 2014
- The World Farmers Organisation will be invited to become an Alliance Partner
- The Alliance Communication Policy was reviewed and adopted by Council
- The research groups are requested to provide a list of the organisations/ institutes they are collaborating with
- Research networks are requested to review adaptation/mitigation synergies in their work plan and research networks, and are requested to create specific Networks to promote such synergies
- The Alliance and its activities will be promoted at the World Agricultural Forum, 4-7 November 2013, Hyderabad, India
- Member countries are encouraged to identify opportunities and activities to include in the Research Group workplans, including identifying and resourcing mitigation research projects or activities that have synergies with adaptation and that improve productivity, resilience and adaptive capacity of agriculture.

<sup>1</sup> Jean Francois Sousanna and Carol Grossman (Soil C & N Cycling Group) were unable to attend the meeting and their presentations were given on their behalf by Harry Clark.

# SAI Platform meeting with the LRG Group of the Alliance

### Hosted by Board Bia, Dublin, 21 June 2013

More than twenty science and industry representatives met at the Board Bia Headquarters in Dublin for the first meeting between the Sustainable Agriculture Initiative (SAI) Platform and the LRG. It was agreed to have been a very successful first meeting between the two groups.

### The SAI Platform

The SAI Platform is the main food industry initiative supporting the development of sustainable agriculture worldwide. Food industries are the biggest purchasers of agricultural raw materials and so to rely on a constant, increasing and safe supply of agricultural raw materials, these must be grown in a sustainable manner. In 2002 Nestlé, Unilever and Danone created the SAI Platform, a non-profit organization to facilitate sharing, at precompetitive level, of knowledge and initiatives to support the development and implementation of sustainable agriculture practices involving the different stakeholders of the food chain.

The SAI Platform today counts over 50 members, which actively share the same view on sustainable agriculture seen as "the efficient production of safe, high quality agricultural products, in a way that protects and improves the natural environment, the social and economic conditions of farmers, their employees and local communities, and safeguards the health and welfare of all farmed species".

For more information about the SAI platform: www.saiplatform.org

### Key Actions from the meeting:

- A relationship has been established between the SAI Platform and the LRG
- The LRG will assist with the connection between the SAI Platform members and key research groups and the SAI Platform will actively connect the agri-food sector with the scientists
- The LRG will discuss the idea of developing a matrix (timescales, topics etc) of current research programmes along the 'research pipeline' and develop an effective method of communicating this externally to facilitate timely engagement by industry.
- The LRG and the SAI Platform will consider ways of communicating the research outcomes to developing countries. Many SAI members are operating in these regions so a potential 'route to market' already exists
- LRG to consider how to potentially embrace a wider sustainability (holistic) approach to future research programmes
- The SAI Platform to explore whether there is benefit in compiling a 'compendium' of open source tools that support GHG mitigation, without necessarily endorsing them
- The SAI Platform will discuss how they can best support the LRG as a test bed for tools and calculations emerging from research projects.

# Updates from the Research Networks of the LRG



### The Feed and Nutrition Network (FNN)

The Network on 'Feed and Nutrition in Relation to Greenhouse Gas Emissions' held its second meeting on June 27, 2013, aligned with the GGAA 2013 conference in Dublin.

The meeting was organised by Switzerland (Michael Kreuzer, Angela Schwarm) and the Netherlands (André Bannink, Jan Dijkstra) and was attended by 31 participants from 22 countries, among them one observer country (Poland) and one non-member country (Nigeria). The FNN focuses primarily on summarizing and utilizing work on mitigating methane emissions from ruminants by nutritional means to develop sound recommendations for stakeholders and to identify future research priorities. One basis for this work is the database which was built for a book ("Mitigation of Greenhouse Gas Emissions in Livestock Production. A review of technical options for  $non-CO_2$  emissions") recently issued by FAO. FAO agreed that FNN can further develop and use this database. Ideas on developing quidelines for conducting and assessing in vitro and in vivo experiments were discussed and elaborated drafts will be presented and discussed in the next meeting. The FNN mission statement was discussed, as well as linkages and potential overlaps to the LRG and other working groups of the Alliance (e.g. the Rumen Microbial Genomics Network, RMG). Switzerland handed over its coordination role to the USA (Alex Hristov, Pennsylvania State University), who will coordinate the network jointly with the Netherlands (Jan Dijkstra, André Bannink).

The group is currently discussing a date and place for its 3rd meeting, planned for 2014 and to be aligned with a conference on a related topic. We encourage interested countries to join the network. For more information please contact the new network co-coordinator Alexander Hristov (anh13@psu.edu) or visit the network website (www.fnnnetwork.wordpress.com).

### Grasslands Research Network

Building on initial consultations and a preparatory expert workshop, the LRG agreed at its annual meeting in Dublin to establish a Grasslands Research Network. The network will focus on options to increase soil carbon sequestration and reduce soil carbon losses in both rangelands and pastures. The addition of this network fills an important gap in the current range of activities pursued by the LRG and promises to be of significant interest to developing country regions, given the large amount of production that occurs in rangelands and unimproved pastures.

The LRG meeting noted the significant synergies between the goals of the network and other organisations such as the International Livestock Research Institute (ILRI), the Global Agenda of Action established by the FAO as well as related modelling activities that seek to integrate changes in soil carbon with emissions of non-CO<sub>2</sub> gases.

The network will be coordinated by Uruguay, with supporting coordinators from each continent. The Grasslands Research Network will also act as the coordinating hub for the planned collaboration between the LRG and the intercomparison of soil C and N models undertaken by the Soil C/N Cycling Cross Cutting Group of the Alliance, which was also agreed and initiated at the LRG meeting. It was also noted that this network would be a key mechanism to draw on and develop synergies between mitigation and adaptation, as had been requested by the Alliance Council. A range of issues discussed at the recent LRG meeting concluded with a note that "this would be best covered by the grasslands network". This demonstrates both the enormous promise of this network, but also that Uruguay will have its hands full in helping the network achieve its potential with the support of all member countries.

Interested participants should contact Gonzalo Becoña, <u>gbecona@planagropecuario.</u> <u>org.uy</u>.

### Rumen Microbial Genomics Network

A joint workshop co-ordinated by the European RuminOmics network and the RMG Network titled 'Harmonisation of techniques associated with ruminal genome, microbiome and metagenome analysis' took place on 22 June immediately before the GGAA conference in Dublin. More than 60 participants from 20 countries attended the workshop. During the morning sessions there were nine short presentations that focussed on the current methods associated with underpinning rumen microbiology studies, such as sampling and sample storage, microbiome analysis, genomics, etc. metatranscriptomics. Breakout sessions in the afternoon focussed on the role of microbial culturing in current studies, rumen microbial taxonomy, suggestions for further resources that could be made available on the RMG Network website, and the future role and structure of the RMG Network

Feedback indicated that the workshops were very helpful, the RMG Network website was a good resource and that it should provide further information on methods, protocols, SOPs, etc. There was also a suggestion that the availability of the workshop presentations and an associated document might provide a convenient and simple roadmap for those researchers new to rumen microbial genomics by providing a helpful resource with 'endorsed', up-to-date methods.

A further workshop will be organised jointly between RuminOmics and the RMG Network as part of the INRA/Rowett series of Gut Microbiology meetings next scheduled to be in Aberdeen, June 2014. Initial funding support from the New Zealand Government for the coordination of the RMG Network has now come to an end. Representatives from the USA and Wales will assist in the Network's co-ordination and leadership over the coming year, and it is hoped that this will ensure the continued operation and sustainability of the network.

For more information please contact the new network coordinator Sharon Huws (<u>hnh@aber.ac.uk</u>) and the newsletter co-coordinator Carl Yeoman (<u>carl.yeoman@</u> <u>montana.edu</u>).

### The Manure Management Network

The MM network had a successful meeting on June 27 in Dublin, Ireland. 12 countries participated in a lively and interesting discussion (China, Finland, France, Ireland, Mexico, Netherlands, New Zealand, Spain, Switzerland, UK, USA, Vietnam). All countries are very active in measuring and inventorying emissions from the manure chain.

The network focuses on the nitrogen cycle through the whole manure chain, including direct and indirect N<sub>2</sub>O emissions associated with ammonia volatilization and N deposition, and nitrate leaching. Within this the network will also stress the link with food security, as manure is an important source of nutrients. The core activities of the group are a) the development and standardization of research methods for quantifying emissions of nitrous oxide and methane, and identification of appropriate mitigation options; b) the dissemination of results via scientific publications, group notes, training of researchers and collaboration with the Manure Management Knowledge Network of the Global Agenda of Action.

One of the key activities is the development of a best practice Guide for measurement of emissions from each phase of the manure chain, by collecting existing information from the participating countries. An introductory chapter will discuss the purpose of the different methods, their pro's and con's, and when to use the most appropriate method. Another activity will be the elaboration of a list of potential mitigation options, paying attention to country specific conditions in technology, important emission sources and farmers' capabilities.

The network will also participate in the Manure Management Knowledge Network of the Global Agenda of Action, providing a pool of experts that can be called upon for dissemination, training, extension and support in projects for improved manure management.

For good progress of the work, the network plans to organize a web based meeting every four months and meet again face to face in summer 2014. For further information contact Theun Vellinga (theun.vellinga@wur.nl).

### The Network on Animal Health Status and GHG Emissions Intensity

There is a broad consensus amongst experts and stakeholders that the greenhouse gas (GHG) emissions intensity from livestock farming could be reduced through efficiency and production gains resulting from improved livestock health. This offers a win-win opportunity in many countries and the Global Research Alliance provides an excellent platform for GHG and animal health research communities to engage. The Network will bring scientists from the two topic areas together to identify and explore synergies between research efforts.

The UK Government is committed to leading the Network for three years and has appointed a Network Secretariat to support the establishment and running of the project and to act as a common contact point for current and prospective participants. This Network is in its early stages and the UK is currently looking to identify a senior scientist, ideally representing perspectives from developing countries, to join them in leading the work. The UK is also in the process of identifying international scientists to participate in Network activities.

UK researchers have been continuing to progress the literature review on global GHG abatement from health interventions in the agricultural livestock sector which will form



Members of the ASGGN listen to John McEwan, New Zealand, explaining lessons he has learned researching traits that will respond to genetic or genomic selection.

a paper for submission to a leading scientific journal. The paper will highlight emerging activities in this field such as the Alliance Animal Health Network.

For further information or to register your interest please email animalhealthnetwork@adas.co.uk.

### The Animal Selection Genetics and Genomics Network (ASGGN)

The Animal Selection Genetics and Genomics Network (ASGGN) recently held its annual meeting in Dublin, Ireland, as a satellite to the Greenhouse Gases & Animal Agriculture Conference. A total of 33 members from 22 countries attended the network meeting. On the agenda for the meeting was discussion about the white paper titled "Breeding ruminants that emit less methane – development of consensus methods for measurement of methane". The paper had been prepared by the Methane Phenotype Working Group, established when the Network first started. The white paper describes the trait that must be measured to ensure that everyone is channelling their efforts in the same direction

A valuable resource for Network members is the Toolkit located on the member's website. Already available to download are the Network's working documents, a spread sheet for calculating the accuracies of genomic breeding values, sample IP and MTA agreements that Network members can use as templates and a proposal for data sharing. The Toolkit will ultimately include standardised methodologies and protocols for scientists taking methane measurements across the globe to ensure data sharing and consistency in data gathered. This will help the Network achieve its goal of finding genetic and genomic solutions for mitigating enteric methane emissions from ruminant livestock.

The ASGGN has completed a successful 2 year establishment phase, supported by funding from the New Zealand Government,

and now has an email circulation of more than 250 members. At the end of the meeting, leadership was handed over to Dr Yvette de Haas from Wageningen UR in the Netherlands who is the new Network Convenor, with continuing support from Dr Hutton Oddy (Australia) and mentoring by the outgoing co-coordinator, Grant Shackell (New Zealand).

The ASGGN will next meet in Vancouver Canada in August 2014 as a satellite to the World Congress on Genetics Applied to Livestock Production.

Members of the ASGGN listen to John McEwan, New Zealand, explaining lessons he has learned researching traits that will respond to genetic or genomic selection.

You can join the ASGGN by registering on the network website <u>www.asggn.org</u>



### Capability Building Opportunities

### Global Research Alliance Senior Scientist (GRASS) Award

### Supporting research in Agricultural Greenhouse Gases

The New Zealand Government has announced funding for senior scientists to participate in an exchange programme to enhance collaboration and the building of mutually beneficial research partnerships between New Zealand and other Global Research Alliance countries.

### Focus areas

- Methane emissions from livestock and livestock wastes
- Nitrous oxide emissions from livestock wastes
- Enhancement of pastoral soil carbon sinks
- Integrated whole farming systems impacts at all scales as they relate to livestock emissions
- National inventory development as it relates to livestock emissions.

### Eligibility

To be eligible, you must:

- Have a PhD or be a scientist with at least 5 years experience participating in/ leading major projects that align to the priorities of LEARN, the Alliance or other relevant national strategies
- Demonstrate impact and leadership in your professional field
- Be able to contribute to scientific research and its application in your home region and the larger Alliance network, based on your networking record
- Work in collaboration with a New Zealand research organisation
- Be resident and normally employed on a permanent contract by a research organisation in an Alliance member country
- Be fluent in English.

### Funding

The exchange must be between 6 weeks and 6 months duration.

- Up to \$30,000 for 6 months (pro rata for less than 6 months) will be provided to recipients to cover actual and reasonable living expenses
- Up to \$5,000 will be provided for economy airfares and travel/medical insurance
- Up to \$5,000 will be awarded for associated research costs

### For more details refer to the LEARN Website:

http://www.livestockemissions.net

Or Email the New Zealand Agricultural Greenhouse Gas Research Centre: <a href="mailto:enquiry@nzagrc.org.nz">enquiry@nzagrc.org.nz</a>



Christopher Antwi on a LEARN Technician Award at AgResearch, New Zealand.

### From Ghana to New Zealand on a LEARN fellowship

Ruminant livestock production systems in Ghana produce relatively high levels of methane per unit of animal product. The methane production, mainly from enteric fermentation, represents a major loss of energy for the animal, which otherwise would be used for maintenance and production by the animal, and has a significant environmental impact.

Few scientists in Ghana and the West African sub-regions have the capacity to measure methane emissions from ruminant livestock. As a result, little or no data are collected from livestock production systems in Ghana, making it impossible to obtain accurate ruminant livestock emissions inventory data or to identify opportunities for monitoring or reducing emissions intensity.

Christopher Antwi gained his PhD in animal sciences in 2010 and is keen to change this situation. He intends to grow capability in this area of research in Ghana and is visiting AgResearch Grasslands, Palmerston North, New Zealand to learn how to accurately measure methane emissions from ruminants using the SF6 tracer technique. In the short space of 12 weeks, Christopher will learn everything there is to know about animal handling, the construction of SF6 equipment, sampling from the yokes and analysis of the SF6 sample using gas chromatography. Additionally, he will gain understanding of how the data gathered informs the national agriculture inventory as well as learn whole livestock farm modelling of agricultural GHG emissions using OVERSEER.

On his return to Ghana, Christopher would like to establish a Centre of Excellence in agricultural GHG research to enable scientists in Ghana, and the West Africa sub-regions to generate accurate agricultural GHG emissions data from livestock production systems and develop inventories based on real activity data rather than assumptions as is currently the case in developing countries.

Christopher is a lecturer in the Department of Animal Science, Kwame Nkrumah University of Science and Technology, Accra, Ghana. He also obtained a Borlaug fellowship with the University of California, Davis in the United States where he was trained on the use of GreenFeed for measuring methane from feedlot steers.

### Global Livestock Emissions and Abatement Model (GLEAM)

GLEAM aims to identify low emission pathways for the livestock sector. It combines modules that calculate emissions for Herd, Feed, Manure, System and Allocation (product) components, and finally calculates emissions per kilogram of product. As the model works at a local level it is able to scale up the results for scenario analysis e.g. a change in regional management practice or feed composition.

The specific objectives of GLEAM are to:

- Produce disaggregated assessments of global greenhouse gas emissions and related mitigation potential, using 'packages' of mitigation options to avoid double counting and ensuring regionally appropriate approaches
- Carry out economic analyses of mitigation costs and benefits
- Engage in multi-stakeholder initiatives on methods and change practices.

GLEAM has been used to complete a review "Mitigation of greenhouse gas emissions in livestock production: a review of technical options for non-CO<sub>2</sub> emissions" published by the FAO (http://www.fao.org/docrep/018/ i3288e/i3288e.pdf). Packages of mitigation options have been designed and tested based on this model – the options all consider income, co-benefits, environmental impact etc.





GLOBAL RESEARCH ALLIANCE ON AGRICULTURAL GREENHOUSE GASES

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