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October 2017

Update from the Co-Chairs

As well as bringing you updates from across the Global Research Alliance (GRA), we wanted to use this newsletter to draw your attention to ways you can help with critical work underway in the Intergovernmental Panel on Climate Change (IPCC).

During the next five years, the IPCC will publish several major reports highly relevant to livestock production, including:

- The IPCC's sixth comprehensive scientific assessment of climate change – due 2021
- A Special Report on the impacts of global warming at 1.5°C above pre-industrial levels and related global greenhouse gas emissions pathways – due 2018
- A Special Report on climate change, desertification, land degradation, sustainable land management, food security and greenhouse gas fluxes in terrestrial ecosystems – due 2019
- A Methodological Report to refine the 2006 IPCC Guidelines for National Greenhouse Gas Inventories – due 2019

IPCC assessments are fundamental to the state of knowledge on climate change and our ability to plan for our collective future. However, their production is not possible without hundreds of scientists from around the world stepping forward to volunteer their time and expertise as authors and expert reviewers.

Nominations for authors for the Sixth Assessment Report (AR6) close on 27 October 2017 and we urge you to consider

stepping forward. Here is a link to the IPCC's online author nominations portal: ipcc.ch/apps/nominations/authors/public/

The chapter on mitigation in AR6 explicitly recognises emissions intensity in agricultural production as part of the suite of mitigation options across the food system. By nominating qualified scientists from across the GRA to act as authors, our community's insights and expertise on this critical issue can help shape the next IPCC assessment.

Increasing the availability and relevance of published literature that IPCC authors can draw on is another important way of contributing, and by that we mean publications that have been through a normal scientific peer review process. Publishing regional and targeted literature reviews are also very helpful, particularly for ensuring that non-English language publications are accessible to IPCC authors. **Deadlines for publications to be considered in the IPCC assessments are indicated on page 2 of this newsletter.**

Please do give serious consideration to our request. The Livestock Research Group (LRG) community is uniquely placed to make a valuable contribution to the IPCC's work and we hope to see a number of you counted among its authors and reviewers and by submitting relevant journal articles.

Harry and Martin

This month's newsletter brings you:

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Save the date: 2018 LRG meeting

The next LRG meeting will take place 14-17 May 2018 at the Institute of Agricultural Science for Southern Vietnam, Ho Chi Minh City, Vietnam. More details will be provided in due course but if you have any questions, please email LRG-enquiry@nzagrc.org.nz.

Deadlines for publications to be considered by the IPCC in preparing its reports

IPCC report title	Indicative cut-off date for publications to be considered in producing the IPCC reports
Global Warming of 1.5°C: an IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emissions pathways	<ul style="list-style-type: none"> • 1 November 2017: Submitted to scientific journal or available as draft technical report • 15 May 2018: accepted by scientific journal or published as technical report
Methodology report to refine the 2006 IPCC Guidelines for National Greenhouse Gas inventories	<ul style="list-style-type: none"> • March 2018: Submitted to scientific journal or available as draft technical report • June 2018: accepted by scientific journal or published as technical report
Climate Change and Land: an IPCC Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems	<ul style="list-style-type: none"> • September 2018: Submitted to scientific journal or available as draft technical report • February 2019: accepted by scientific journal or published as technical report
IPCC Sixth Assessment Report, covering: <ul style="list-style-type: none"> • Physical science basis of climate change (Working Group I – published in April 2021) • Mitigation of climate change (Working Group III – published in July 2021) • Impacts, adaptation and vulnerability to climate change (Working Group II – published in October 2021) • Synthesis across the three Working Groups and Special Reports – published in April 2022 	For Working Group III: Mitigation <ul style="list-style-type: none"> • April 2020: Submitted to scientific journal or available as draft technical report • October 2020: accepted by scientific journal or published as technical report

Towards low emissions livestock: the GRA's Enteric Fermentation Flagship

The GRA's Enteric Fermentation Flagship is beginning to take shape with four initial project proposals presented to the Council when it met in August.

The Enteric Fermentation Flagship is being set up to support countries account for and reduce enteric methane emissions within a context of sustainable development and food security. It is focused on:

- Development of solutions for reducing enteric methane emissions
- Improved quantification of emissions at national to farm scales
- Identification, testing and implementation of appropriate mitigation solutions in diverse situations

More than 50 project ideas were put forward by countries during the flagship's development

over the last 12 months, including at the LRG meeting held in Washington D.C. in April this year. A prioritisation process whittled this down to four initial project ideas to present at the GRA Council meeting:

1. Profiling the Rumen Microbiome: breeding for productivity and environmental gains
2. Feed for Yield: quantifying the effect of nutrition on enteric methane
3. RumenPredict + : linking genetics, diet and the rumen to predict environmental outcomes
4. Forages for the Future: mitigating enteric methane from grazing livestock

These four were identified because they (a) extended existing multi-country projects and (b) had an existing funding base, and therefore could get up and running quickly.

The remaining group of project ideas will continue to be worked on by countries, as well as further project ideas gathered. For more information on progress with the GRA's three other research flagships, see page 6.

(1) Profiling the rumen microbiome: breeding for productivity and environmental gains

Who? Led by New Zealand and also involving Australia, Brazil, Denmark, Uruguay and African and other GRA countries. The project is an expansion of existing work in the LRG's Animal Selection, Genetics and Genomics Network, that is funded by New Zealand.

What? A method is being developed in New Zealand and Australia for rapid, low-cost profiling of sheep rumen microbiomes to identify low methane emitting animals. As a Flagship project, this work will be expanded to enable other countries to contribute and to include other ruminants e.g. cattle and goats. Initially, additional genetic profiling will be undertaken in dairy and beef systems in Australia, Brazil and across Africa. The project will identify animals with low methane as well as those better adapted to local circumstances.

Why? The new work will yield a method to support genetic selection of animals that doesn't require expensive infrastructure and can be used in live animals at any stage of production. The method can then be used to identify and select low-emitting animals that are also better adapted to sustain periods of feed restriction and low quality forage.

(2) Feed for Yield: quantifying the effect of nutrition on enteric methane

Who? Led by the coordinators of the LRG's Feed & Nutrition Network (USA and the Netherlands) and potentially involving all GRA countries.

What? This project is a major expansion of existing work funded by ERA-GAS and known as CEDERS (see page 4). Databases on feed/methane relationships will be broadened to include new data representing production systems and environments around the world. This will enable more specific methane yield (Y_m) values to be developed for local feeds and production circumstances that can then be used by participating countries to improve their national inventories and to demonstrate mitigation. Expansion will focus on addressing the biggest gaps in current data, including tropical systems and systems relying on by-products for feed.

Why? Manipulating feed type and supply is one of the main ways of mitigating enteric methane. More comprehensive and globally representative data is urgently needed to increase the understanding of the relationship between enteric methane and feed, to develop nationally appropriate mitigation options and to provide locally appropriate emission factors.



(3) RumenPredict + : linking genetics, diet and the rumen to predict environmental outcomes

Who? Led by the UK coordinator of the LRG's Rumen Microbial Genomics Network and potentially involving all GRA countries.

What? As with project 2, this project is a major expansion of existing work funded by ERA-GAS and known as RumenPredict (see page 4). It will use published data to develop a database that links genetics, diet and the rumen microbiome to environmental outputs. This exploitation of existing data will enable significant research gains in understanding how changes in the rumen microbiome alter rumen function and can reduce enteric methane emissions.

Why? Manipulating the microbes in the rumen is potentially a highly effective mitigation strategy. Global knowledge of the make-up and functioning of these microbial communities has increased substantially thanks to existing GRA collaborations such as the Global Rumen Census and the Hungate 1000. This project would build on past GRA projects by broadening the samples gathered to include a wider range of production environments. This in turn supports better forecasting of animal emissions and the most appropriate strategies for mitigation.

(4) Forages for the Future: mitigating enteric methane from grazing livestock

Who? Led by Canada and potentially involving all GRA countries.

What? This project will examine the practical and economic feasibility of the most promising feed-based solutions for reducing enteric methane in forage-based (grazing) systems. A database will be developed that compiles and summarises information obtained from GRA countries who have tested a range of mitigation approaches suitable for forage-fed ruminants. This will include novel local feeds, and novel feed additives and supplements.

Why? Many feed-based mitigation strategies have been identified (e.g. lipid-containing supplements, feeding compounds, legume forages etc). However, these can be challenging to apply at the local level for grazing ruminants. Providing a critical evaluation of the efficacy of the various strategies will help inform countries' understanding of the options most appropriate to their production circumstances.

Funding for the flagship projects

Although all four projects have existing resourcing to draw on, additional funding will be needed to expand the existing projects. Countries and other research partners can make in-kind contributions by providing samples or data (depending on the project's needs) or cash funding to assist with the costs of increased project coordination, database development, analysis etc, e.g. by sponsoring a postdoctoral position. It is hoped that the GRA's 'GHG Nexus' initiative might provide a means for attracting and coordinating some of this funding (see page 6).

For more information on the Enteric Fermentation Flagship, please contact LRG-enquiry@nzagrc.org.nz

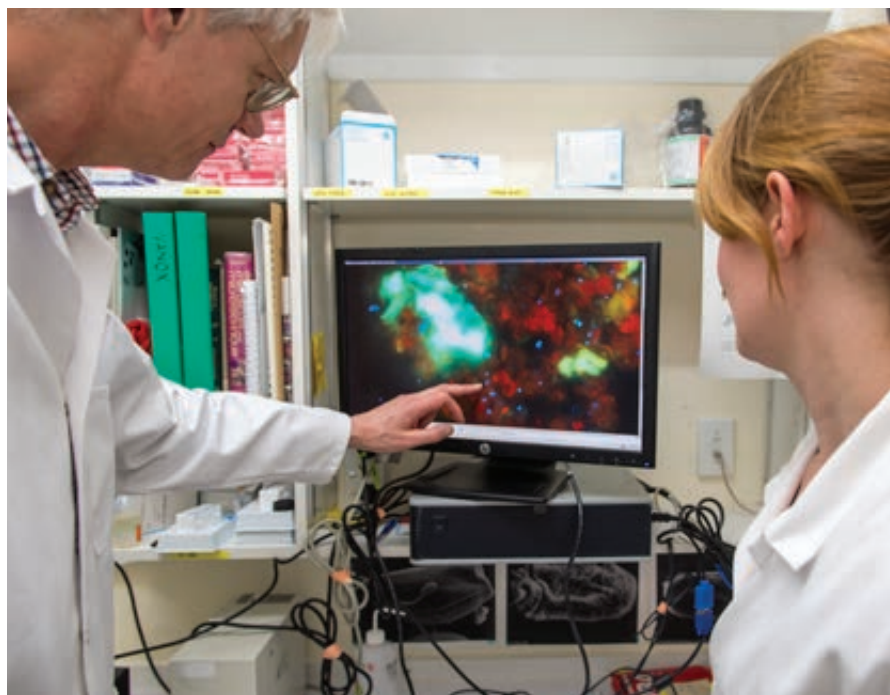
New funding for LRG research network projects on feed and nutrition and the rumen microbiome

Scientists from the LRG's research networks have been successful in securing nearly €4.5 million for three projects relating to feed and nutrition, and understanding the rumen microbiome.

Funding for these projects comes from the European joint programming initiative on agriculture, food security and climate change (FACCE-JPI) and its ERA-GAS co-fund, set up between European countries and New Zealand. The projects are directly relevant to the work of the LRG and two of them (RumenPredict and CEDERS) will be expanded as part of the GRA Enteric Fermentation Flagship (see page 2), via the Council's new 'GHG Nexus' initiative (see page 6).

RumenPredict: Predicting appropriate GHG mitigation strategies based on modelling variables that contribute to ruminant environmental impact

RumenPredict is led by Sharon Huws (Queens University Belfast), coordinator of the LRG's Rumen Microbial Genomics (RMG) network. It is focused on generating new data to link rumen microbiome information to host genetics and phenotype and to develop feed-based mitigation strategies. The project builds on previous RMG projects, including the Hungate 1000 (focused on sequencing 1000 rumen microbes) and the Global Rumen Census, to create a data platform for predicting how host genetics, feed additives or the microbiome may affect emission phenotypes. This will support the further development of genetic/diet/prediction technologies, bringing them closer to implementation and a future where the environmental impact of ruminant livestock can be sustainably reduced.



METHLAB: Refining direct fed microbials (DFM) and silage inoculants for reduction of methane emissions from ruminants

The METHLAB project is also directly relevant to the RMG. Coordinated by Ireland, it brings researchers together from multiple disciplines around the world to enhance the impact of lactic acid bacteria (LAB) on reducing methane emissions from cattle and sheep. LAB are natural inhabitants of the gastrointestinal tract of ruminants but are also well established as industrial micro-organisms, economically produced in large quantities for incorporation into feed products. This makes them ideally suited as a microbial technology. The project aims to identify superior microbial inoculants and then use these to improve the quality of ruminant feeds, in turn leading to enhanced livestock production and a reduction in enteric methane emissions.

CEDERS: Capturing Effects of Diet on Emissions from Ruminant Systems

CEDERS is led by Andre Bannick (Wageningen UR), one of the coordinators of the LRG's Feed & Nutrition Network. The project brings nine countries together to delineate dietary effects on various on-farm greenhouse gas sources and their trade-offs, at the farm and national scales. It will do this by developing, expanding and refining databases to evaluate dietary mitigation strategies on digestion, excretion, manure composition and related greenhouse gas emissions; fill key knowledge gaps on livestock emissions (including manure); and use monitored on-farm case studies to model the consequences of dietary mitigation measures on total farm emissions. It also aims to improve the capture of the effects of dietary mitigation measures in on-farm accounting and national greenhouse gas inventories.

Save the dates: LRG meetings in 2018 and 2019

We are delighted to confirm the dates for the next two LRG meetings. Please save these dates in your calendar – we look forward to seeing you in Vietnam in 2018 and Brazil in 2019.

14-17 May 2018

With thanks to the Government of Vietnam, we invite you to join us at the Institute of Agricultural Science for Southern Vietnam in Ho Chi Minh City for our next LRG meeting. More details will be provided in due course but in the meantime, if you have specific agenda items that you would like to see discussed, please don't hesitate to get in touch.



August 2019

In 2019, Brazil will host the world's preeminent scientific gathering on climate change and livestock – the Greenhouse Gas and Animal Agriculture (GGAA) conference. The GGAA will take place in Foz do Iguaçu, Paraná, on the border with Panama and Argentina and near the spectacular Iguaçu Falls – one of the world's largest waterfall systems. The LRG will meet immediately after the GGAA conference, making the most of this international gathering of livestock greenhouse gas emissions scientists.



Nine new partners for the GRA and a mechanism to support flagship activities

The GRA Council has held its seventh annual meeting – this year from 29-31 August 2017 in Tsukuba, Japan.

The Council is the representative body of all GRA member countries. It oversees the work of the GRA's four Research Groups, implementation of the 2016-2020 GRA Strategic Plan and relationships with key partner organisations. This year's meeting was attended by representatives from 27 countries as well as GRA partners and other invited organisations.

As well as receiving updates and advice from the Research Group co-chairs and taking stock of performance against the GRA's Strategic Plan, the Council made progress on:

- Initial priority projects within the four existing GRA flagships, as well as agreeing to explore two further flagships
- Extending its global and regional partnerships
- Developing a mechanism to coordinate research funding in support of the flagships
- Improving the delivery of capability building

Flagships

When it met in 2016, the GRA Council approved the development of four flagship programmes as a way of defining research priorities and attracting resourcing. The flagships are:

1. Enteric fermentation
2. Agricultural greenhouse gas inventories
3. Soil carbon sequestration
4. Water management in rice production

The Council received presentations on each of the four flagships, and discussed the prospects for two further flagships – one on the 'circular food system' and the other on nitrous oxide. The Netherlands will lead development of a taskforce to explore a flagship on circular food systems, and the Croplands Research Group will take the nitrous oxide flagship forward.

Details on the Enteric Fermentation Flagship and its four initial projects are shared on page 2. In terms of the other two flagships of relevance to the LRG, the Council was presented with seven high-level project concepts for the Inventory Flagship, including development of guidance on incorporating mitigation into national inventories, guidance on higher Tier inventories, and guidance on incorporating manure management emissions in inventories; database and inventory refinement for greenhouse gas emissions associated with manure and

nitrogen management; and regional or country specific project ideas.

The Soil Carbon Sequestration Flagship will focus mostly on activities within the existing 'Coordination of International Research Cooperation on Soil Carbon Sequestration in Agriculture (CIRCASA) initiative, funded by the FACCE-JPI. CIRCASA aims to strengthen the international research community on soil carbon sequestration in relation to climate change and food security; improve our understanding of agricultural soil carbon sequestration and its potential for mitigation, adaptation and increasing food production; co-design a strategic research agenda with stakeholders on soil carbon sequestration; and create an 'International Research Consortium' (funding model) in this area. The Flagship will also assess options for soil carbon sequestration in grazing systems and set up a 'soil microbiome for soil carbon' network.

The GRA Secretariat is now working with flagship leaders to collate the project ideas and identify which ones have the leadership, support and resourcing needed to succeed. Countries and partners will be invited to review this and indicate their support for specific activities.

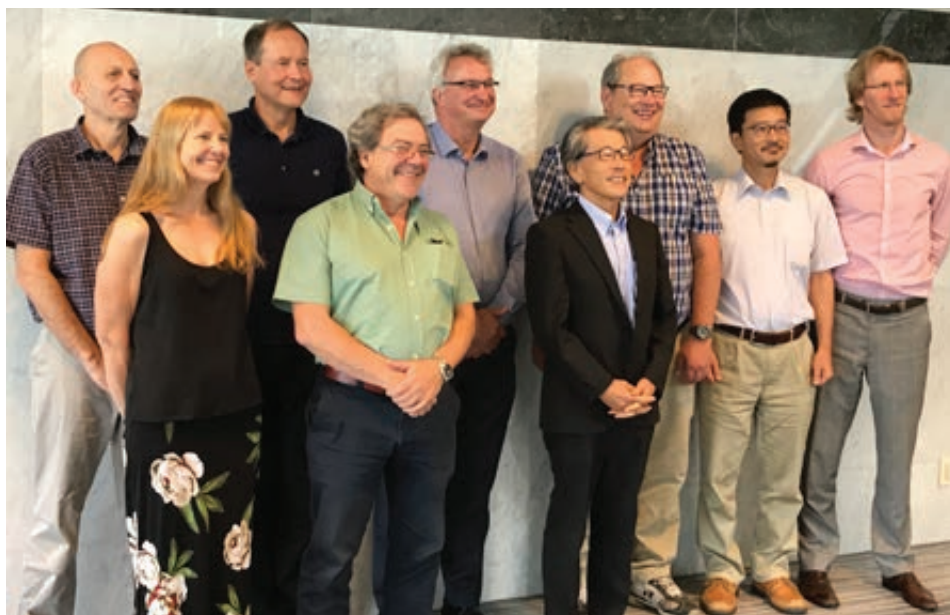
For more information on the flagships, please contact secretariat@globalresearchalliance.org.



Representatives at the 2017 GRA Council meeting in Tsukuba, Japan

Research funding

Related to the flagships is the development of possible mechanisms for GRA joint programming. After a year-long process exploring options for aligning and mobilising funding for GRA research activities, the Council has initially agreed to establish the 'GHG Nexus' (see diagram below). This will enable relevant projects recently funded through two European research calls (ERA-GAS and SusAN) to be linked to GRA flagship activities and expanded to include broader geographic coverage (e.g. more data from different regions), system coverage (e.g. additional species) or research focus (e.g. other feed additives). GRA countries have been invited to express interest in participating in any of the fourteen projects and to identify associated resource contributions (cash or in-kind). More information is available from the GRA Secretariat or from individual GRA Council representatives.



Research Group co-chairs and GRA Special Representative Hayden Montgomery at the Council meeting

Partnerships

The GRA currently has [13 formal partners](#). These organisations have been identified for their expertise, scope of work and capacity to support GRA efforts to reduce agricultural greenhouse gas emissions and increase carbon sequestration. At this year's meeting, the Council agreed to pursue new partnerships with:

- Asian Development Bank
- Caribbean Agricultural Research & Development Institute
- Forum for Agricultural Research in Africa
- Global Agri-business Alliance
- International Fertiliser Development Centre
- International Fund for Agricultural Development
- International Soil Reference and Information Centre
- Sustainable Agriculture Initiative Platform
- World Business Council on Sustainable Development

Capability building

The Research Group co-chairs delivered a clear message to the Council that more countries need to step forwards to help resource and deliver capability building activities. This was noted with the Council also agreeing that capability building activities should be demand-driven, meeting countries' key areas of need. To this end, the Council has asked the Secretariat to develop an inventory of countries' needs and to identify possible fellowship opportunities (from countries or partners) that could support implementation of GRA activities, particularly those in the flagships.

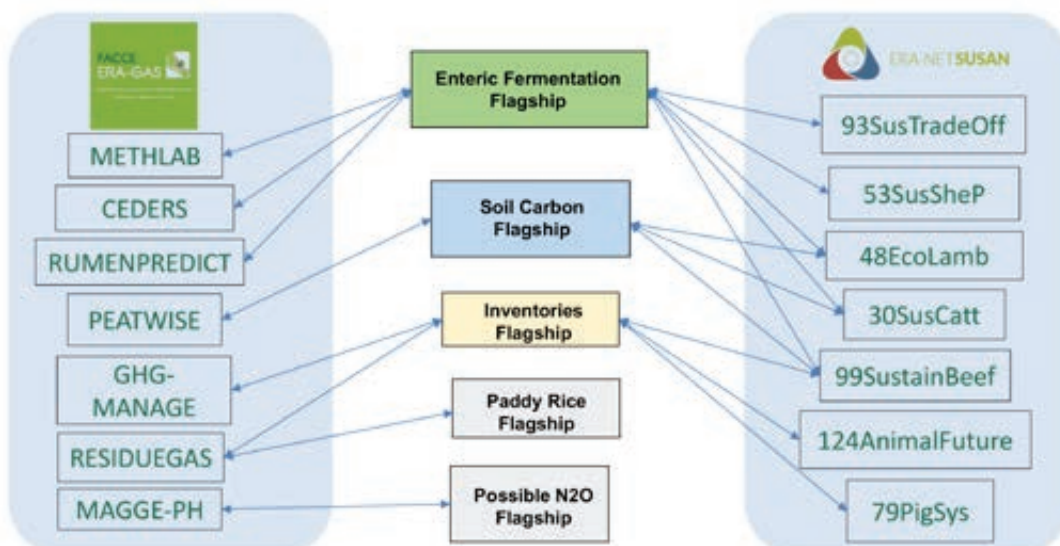
New Zealand took the opportunity of the Council meeting to launch its latest capability building initiative: a GRA fellowship programme it is hosting in collaboration with CCAFS. Known as 'CLIFF-GRADS' (CCAFS' Climate, Food and Farming Research Network with the GRA Development Scholarship), the scheme

will support PhD students from developing countries to spend between 4-6 months working on research projects of relevance to the GRA. Applications will open in November 2017. For more information, contact the Secretariat.

Other snippets from the Council meeting:

- Japan is the new Council chair and Germany is co-chair
- Japan will host a GRA side event at its pavilion at the 2017 UN climate change conference in Bonn, Germany. The side event will take place 2pm-3.30pm, 13 November.
- Spain has recently joined the US and Brazil in co-chairing the Croplands Research Group
- The LRG is looking for a third co-chairing country, as is the Paddy Rice Research Group
- Germany has offered to organise a GRA conference as part of its hosting the Council meeting during 2018

The GHG Nexus - an example of a mechanism for mobilising GRA resources by linking European-funded projects with the flagships



Improving livestock greenhouse gas inventories in South and South-East Asia

Inventory practitioners from across South and South-East Asia came together in Bangkok in September for a third regional workshop on Tier 2 inventories for livestock emissions.

A core part of the Livestock Research Group's capability building work supports countries to develop advanced national greenhouse gas inventories for livestock systems. As part of this, funding from New Zealand has enabled the creation of a regional programme to provide advice and assistance to eight countries in South and South East Asia for improving their livestock greenhouse gas inventories. The workshop series, which began in 2015, has helped participants understand the benefits of higher Tier inventories for livestock systems and the steps needed for developing them domestically and in line with national circumstances, priorities and capacities. You can read more about the previous two workshops in our newsletters from [September 2016](#) and [December 2015](#).

The third workshop took place 11-14 September 2017 in Bangkok, Thailand and was attended by 28 participants, along with international inventory and MRV experts. There was much discussion of the role of inventories in the UNFCCC and the Paris Agreement on climate change, including

for enhanced transparency and monitoring of countries' Nationally Determined Contributions. Countries presented posters on the current situation with their agricultural and livestock greenhouse gas inventories and how those inventories could contribute countries' ambitions for mitigation in their livestock sectors. There were discussions on the challenges and barriers that countries face in trying to improve their livestock greenhouse gas inventories, with countries identifying the following:

- Activity data: many countries expressed the lack of performance-type activity data as a major information gap for inventory development. Countries were interested in hearing how activity data can be obtained effectively.
- Capacity: for many countries, development of an inventory is completed by a very small number of people. This, coupled with finding sufficiently skilled people, was seen as a barrier and countries expressed a desire to increase the number of people and expertise of their teams through training opportunities.
- Institutional arrangements: identification of the relevant data and/or expertise required for developing inventories was seen as an important step, along with the need to ensure that data is shared among all parties. Lack of arrangements for this between institutions was identified as a barrier to implementation.

The highlight for many participants was a presentation from Dr Yeni Widiawati who described Indonesia's experiences with developing and implementing a Tier 2 inventory, including the barriers and issues encountered in the process. Participants agreed that more of this sharing of regionally relevant experiences would be very helpful in the future.

The workshop also included a practical training component on quality assurance and quality control (QA/QC) for inventories and participants discussed ways to strengthen their own QA/QC systems.

By the close of the workshop, participants had developed individual action plans for improving their country's inventory and identified ways that the GRA could continue to support their endeavours, for example:

- Help to improve institutional linkages in countries
- Technical training on tools such as ALU (the Agriculture and Land Use National Greenhouse Gas Inventory Software programme funded by the US for the UNFCCC)
- Guidance on activity data issues
- Development of regionally relevant projects (e.g. pilot projects demonstrating how to get better data on intake and feed digestibility).



Partner Update: Highlights from CCAFS



RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security



CCAFS is the CGIAR's Research Program on Climate Change, Agriculture and Food Security. Its research aims to develop and scale up agricultural practices and policies that are adaptive to climate change, reduce greenhouse gas emissions and increase farmers' resilience. Over 200 scientists working in five regions of the developing world are part of the CCAFS program. CCAFS is an important partner for the LRG, with many shared priorities.



@USAID/Tourné

Smallholder farmers can increase productivity and reduce emissions through some management practices. Widespread adoption would contribute to sustainable development goals.

Recent livestock research highlights from CCAFS

CCAFS has been working with the FAO and the United States Agency for International Development (USAID) to improve understanding of how different agricultural management practices impact yields, net greenhouse gas emissions and emissions intensity. Researchers analysed nine USAID agricultural projects and identified agricultural management practices in tropical rice, agroforestry and livestock systems that increase production, provide climate change mitigation co-benefits and have potential for widespread adoption. You can read more about these findings [here](#).

In an article in the *Journal of Cleaner Production*, researchers explored the link between Brazilian cattle production practices, programmes targeting farmer practices, and resultant livestock greenhouse gas emissions by asking the question: "Does the farm-level balance of greenhouse gas emissions related to raising cattle differ between farms that do and do not participate in a sustainability program or sustainability certification?". <https://doi.org/10.1016/j.jclepro.2017.06.130>

CCAFS researchers have published a paper in the inaugural edition of *Lancet Planetary Health* that provides a breakdown of global agricultural and nutrient production by farm size and explores the associations between farm size, agricultural diversity and nutrient production. This analysis is helpful in contemplating the role of agriculture in feeding the world's growing population and in particular, the place of the approximately 570 million smallholder farmers within that. The results show that farm size and diversity of agricultural production vary substantially across regions and are key structural determinants of food and nutrient production that need to be considered in plans to meet social, economic and environmental targets. [https://doi.org/10.1016/S2542-5196\(17\)30007-4](https://doi.org/10.1016/S2542-5196(17)30007-4)

Other interesting publications

- Karwat H, Loretta D, Arango J, Núñez J, Rao I, et al. Residual effect of BNI by *Brachiaria humidicola* pasture on nitrogen recovery and grain yield of subsequent maize. *Plant Soil*. <https://link.springer.com/article/10.1007%2Fs11104-017-3381-z>
- Ortiz- Gonzalez D, Vaast P, Oelofse M, de Neergaard A, Albrecht A, Rosenstock TS. Farm-scale greenhouse gas balances, hotspots and uncertainties in smallholder crop-livestock systems in Central Kenya. *Agriculture, Ecosystems and Environment*, 248: 58-70. <http://linkinghub.elsevier.com/retrieve/pii/S016788091730244X>
- Sapkota TB, Aryal JP, Khatri-Chhetri A, Shirsath PB, Arumugam P, Stirling CM. Identifying high-yield low-emission pathways for the cereal production in South Asia. *Mitigation and Adaptation Strategies for Global Change*, 1-21. <https://link.springer.com/article/10.1007%2Fs11027-017-9752-1>

Technical training builds capability at the International Center of Tropical Agriculture

Catalina Trujillo Ospina is the technical coordinator of the greenhouse gas laboratory at the International Center of Tropical Agriculture (CIAT) in Colombia. CIAT works closely with national governments to help quantify livestock GHG emissions and develop mitigation options for livestock systems.

Catalina recently received a LEARN Technical Training Award to spend eight weeks in New Zealand under the supervision of Dr Cecile de Klein, Principal Scientist at AgResearch. This enabled Catalina to advance her skills in laboratory management and to get exposure to advanced techniques in GHG measurement. This experience was particularly important as Catalina is involved in 'LivestockPlus', a regional project measuring livestock greenhouse gas emissions to inform the development of mitigation policies for cattle farming in Colombia and Costa Rica.

While in New Zealand, Catalina learned about techniques and processes for conducting measurements of nitrous oxide emissions

from soils using static chambers. She improved her knowledge on nitrous oxide gas analysis at New Zealand's National Centre for Nitrous Oxide Measurement based at Lincoln University, and expanded her skills in quantifying enteric methane emissions using open-circuit respiration chambers, in vitro fermentation, and the SF₆ tracer technique. Catalina was able to compare the procedures used at CIAT with how things are done in New Zealand and will use the knowledge gained to improve research systems at CIAT.

This new knowledge will greatly benefit CIAT's greenhouse gas quantification programme and hopefully lead to further collaborative work between CIAT and New Zealand scientists and technicians.

www.livestockemissions.net



Catalina taking nitrous oxide measurements in the field as part of her LEARN Technical Training Award.

International fellowship opportunities

LEARN Awards (sponsored by the New Zealand Government)

LEARN is an awards scheme sponsored by the New Zealand Government to build international capability in livestock emissions research. It is part of New Zealand's support for the **Global Research Alliance on Agricultural Greenhouse Gases**.

LEARN is focused on:

- Supporting technical staff and scientists from developing countries and Alliance member countries to work alongside New Zealand colleagues
- Sharing knowledge on livestock greenhouse gas emissions measurement, modeling and mitigation practices to increase the level of scientific skills and technological capabilities internationally.
- Supporting strategic research and capability building activities that align with the priorities of the Alliance as well as relevant New Zealand science priorities.
- Advancing common research interests between countries and building enduring relationships.

There are four LEARN awards offered:

- Co-funded PhD Scholarship
- Postdoctoral Fellowship
- Technical Training Award
- Global Research Alliance Senior Scientist (GRASS) Award

The awards are assessed on a quarterly basis with the next two closing dates for full applications being **30 October 2017** and **31 January 2018**. All applications must be developed in close collaboration with a New Zealand research institution. For more information, please see www.livestockemissions.net

Borlaug Global Research Alliance Fellowships (sponsored by the USA)

The Borlaug International Agricultural Science and Technology Fellowship Program promotes food security and economic growth by providing training and collaborative research opportunities to fellows from developing and middle-income countries. The scheme is administered by the US Department of Agriculture (USDA) and includes a special program for Global Research Alliance countries. Fellows will work a mentor at USDA's Agricultural Research Service or a US university for up to 12 weeks on resilient agricultural research. The US mentor will later visit the fellow's home institution to continue collaboration.

Targeted research areas for this latest round of GRA fellowships include:

- Developing tools for greenhouse gas and carbon sequestration assessments
- Reducing greenhouse gas emissions intensity in crop production systems
- Reducing greenhouse gas emissions intensity in livestock production systems
- Developing databases and strategies for synthesis, integration and decision support to manage greenhouse gas emissions and carbon sequestration in agricultural systems

Applications for the 2018 program close on 5 November 2017.

For more information, please see

<https://www.fas.usda.gov/newsroom/accepting-applications-2018-borlaug-global-research-alliance-fellowships>

Upcoming events

IPCC author nominations for the 6th Assessment Report

Nomination of authors for the IPCC's Sixth Assessment Report close this month. Please see pages 1 and 2 of this newsletter for more details.

Date: 27 October 2017

Website: <https://www.ipcc.ch/apps/nominations/authors/public/>

APHCA/FAO regional climate-smart livestock meeting

The FAO is convening a regional workshop focused on climate-smart livestock in the margins of an Animal Production and Health Commission for Asia and Pacific (APHCA) meeting.

Date: 7-8 November 2017

Location: Myanmar

Contact: Katinka.DeBalogh@fao.org

COP23 GRA side event

Japan is hosting a side event to promote the activities of the GRA to delegates attending the UN's 23rd annual climate change conference.

Date: 2pm-3.30pm, 13 November 2017

Location: Japan Pavilion, World Conference Centre, Bonn, Germany

Contact: secretariat@globalresearchalliance.org

Climate-Smart Agriculture 2017: Global Science Conference

The fourth Global Science Conference on Climate Smart Agriculture (CSA) has the theme of 'Catalysing local innovations and action to accelerate scaling up of CSA. The previous event took place in 2015.

Date: 28-30 November 2017

Location: Johannesburg, South Africa

Website: <http://csa2017.nepad.org/en/#>

GRA Integrative Research Group meeting

The IRG is meeting in Paris early in 2018.

Date: 16-18 January 2018

Location: Paris, France

Contact: secretariat@globalresearchalliance.org

GRA Livestock Research Group meeting

The LRG will hold its 2018 meeting at the Institute of Agricultural Science for Southern Vietnam. More information will be circulated towards the end of 2017.

Date: 14-17 May 2018

Location: Ho Chi Minh City, Vietnam

Contact: secretariat@globalresearchalliance.org

Contacts



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