LIVESTOCK RESEARCH GROUP
news

LRG Co-Chair Update

Dear Colleagues and Partners,

It's hard to overstate the destruction the ongoing Sars-CoV-2 pandemic is leaving in its wake. Much of the immediate global attention rightly focuses on rebuilding livelihoods, improving public health systems and biosecurity.

But as nations move to reopen their economies, additional reflection on some GRA-related issues might be instructive:

Despite Sars-Cov-2's destruction and the expectation that global carbon dioxide emissions will fall by the most significant amount since World War 2 (currently estimated, at least, 8% in 2020), this, in the absence of subsequent structural change, is unlikely to have any significant impact on climate change.

The intricate linkages between livelihoods, global and local food systems, climate and the environment, so painfully laid bare by the pandemic, reinforce the urgency to improve production and consumption systems. Further, this has also highlighted the need to transform the fundamental characteristics of these systems to tackle the underlying causes of inequity and unsustainability. 1

Science, innovation and capacity building, woven into the responses to Sars-CoV-2 and directed towards sustainable growth, will be essential in the transition towards more sustainable and inclusive development. Ensuring livestock's contribution to this agenda without growing the sector's emissions is a central element of these responses.

With that in mind, and even though the SARS-CoV-2 pandemic has caused the postponement of the COP26 summit, countries are still expected to deliver the ambition needed to tackle the climate crisis and to update their climate pledges and Nationally Determined Contributions (NDC). COP26 thus remains the pivotal moment for countries to align their domestic climate plans with the 2015 Paris Agreement. Accounting for GHG emissions and removals, however, remains challenging to many of its signatory countries.

We, therefore, propose that the LRG's 2020 annual meeting, scheduled to take place on 18 and 19 September, will explore the assistance countries may require to move towards meeting part of their commitments to the Paris Agreement and the Koronivia Joint Work on Agriculture, by focussing on issues such as: (i) Development of detailed baselines for livestock emissions to support NDCs; (ii) Approaches and tools to support Monitoring, Verification and Reporting (MRV); and (iii) Preparation of context-specific mitigation plans and policies.

As we have indicated in an earlier communication, the 2020 LRG meeting will be entirely web-based. Over the coming months, the Co-chair team will be inviting inputs from al members to developing a programme of region-specific and global on-demand presentations and panel discussions followed by live-streamed comprehensive discussion and decision-making sessions, to ensure the LRG 2020 achieves its objectives.

We look forward to you joining us on this journey,

Sinead Waters
Richard Dewhurst
Jeroen Dijkman

MAY 2020 ISSUE

GLOBAL
RESEARCH
ALLIANCE
ON AGRICULTURAL
GREENHOUSE GASES

Introducing Richard Dewhurst

I am Professor of Ruminant Nutrition & Production Systems and Head of the Dairy Research Centre at Scotland's Rural College (SRUC). After leading research units in Wales, New Zealand, and Ireland, I joined SRUC in 2013. My career could be described as a tour of the English-speaking world! I received the Sir John Hammond Memorial Award in 2008 and have served as President of both the New Zealand Society of Animal Production and the British Society of Animal Science.

Richard Dewhurst joins as LRG co-chair

Over more than 30 years, I have worked on different areas of ruminant nutrition, at the interfaces between nutrition, product composition and rumen function, including modelling of forage composition, dry cow feeding strategies, forages and fatty acids, fatty acids and fertility, and rumen diagnostics. My current research works to develop markers for feed conversion efficiency and greenhouse gas emissions from ruminants and exploring host interactions with the intestinal microbiome.

I enjoy working with colleagues from around the world in a series of major international collaborative projects. These include: 'Rumen Stability' as part of the FACCE-JPI programme; EU Horizon 2020 'SmartCow' and 'Legumes Translated' projects; and a new ERA-NET project ('GrasTec') exploring precision technologies to reduce GHG emissions from grazing ruminants.

I chaired the Scientific Committee for the Greenhouse Gases and Animal Agriculture Conference (Dublin; 2013). This experience gave me insights into the fantastic range of activity across the GRA Livestock Research Group (LRG) community.

GHG emissions and climate change are enormous challenges. I am delighted to be helping drive research and adoption of a broad range of solutions in livestock systems through my new role as Co-chair of the LRG, supported by the UK Department for Environment, Food & Rural Affairs (DEFRA). I'm already involved in organising the 2020 annual meeting of the LRG in the UK and working with networks to help them to identify new opportunities. While the Co-chair role is mostly about helping networks and individuals to get things done, some of my aspirations for LRG include:

- raising the profile of improving technical efficiency to deliver 'win-win-win' outcomes (productivity, financial and environmental) for livestock systems around the world;

- developing advisory packages and training advisers as critical routes to getting messages out to farmers and achieving change;

- diet and genetic effects on nitrogen-use efficiency as key priorities with essential effects on soil and air quality in addition to nitrous oxide emissions; and

- global implementation of knowledge on genetics and genomics of methane emissions.

LRG Priorities

One of the key LRG actions agreed for 2019/2020 was to facilitate preparation of a science-based manuscript on the role of livestock in sustainable agri-food systems. Following that instruction, the Co-chair team has worked to bring together a global science consortium which is preparing the first manuscript for publication in a high-impact journal.

The review, based on published science and pertinent ongoing work, examines the livestock sector in a realm that limits global warming within the temperature goal of the Paris Agreement. It explores global and regional implications through a systems-perspective lens while balancing for selected livelihood; food and nutritional security; one-health; social and cultural; and other environmental outcomes encompassed by the Sustainable Development Goals (SDGs). Previous studies have weighed mainly these issues against globally applied, one-dimensional objectives such as "healthy diets" (e.g. Willet *et al*., 2019).

Specifically, the review, within its multi-dimensional systems framing, conducts a state-of-the-art knowledge and literature analysis to provide novel insights and concrete proposals relevant for the science-policy interface. It also conducts regional and national case studies to explore appropriate linkages, trade-offs and policy instruments and incentive structures. It achieves this through differentiated analyses of potential sources of sector disruption and other drivers of sector change and transition pathways. It also achieves this by comparing existing and new livestock agri-food system typologies with alternative 'providers', to elucidate their current contribution, and the risks they present to achieving specific climate and other SDGs at global and regional levels.

The review contrasts the underlying livestock sector-relevant techno-economic assumptions included in the Shared Socioeconomic Pathways narratives (e.g. Riahi *et al*., 2017), baseline scenarios and the leading global Integrated Assessment Models, with real-world outcomes to date. It also scrutinises the feasibility and desirability of stringent livestock sector mitigation and land-use change away from livestock to achieve the Paris Agreement outcomes.

Based on these analyses, the review presents a range of possible futures for different regions compatible with the framing of the study. It concludes with the identification of knowledge gaps and the new research and analyses required to achieve a balanced understanding of livestock and sustainable agri-food system futures.

The GRA-LRG facilitated study is expected to be finalised for publication by September 2020.

The Co-chair team invites LRG members intent on contributing to the review to register their interest by emailing enquiry@nzagrc.org.nz.

New Tools

LIVESTOCK ACTIVITY DATA GUIDEBOOK

A new Livestock Activity Data Guidebook tackles the challenges of compiling data related to livestock management activities. The guidebook provides practical methods for countries to organise the activity data used to implement the IPCC Tier 2 methodology, making compiling activity data more manageable than typically perceived.

The guidebook presents an 8-step framework for countries to compile activity data. It can answer what data is needed; how to collect the necessary data; assess data availability and quality; how to fill data gaps; how to document the inventory and determine inventory quality; and how to plan for continuous improvement.

The guidebook fills a long-standing gap in learning resources dedicated to improving livestock greenhouse gas inventories. It shows that the lack of activity data is often more a perceived rather than a real barrier to adopting a Tier 2 approach. When first selecting a Tier 2 approach for livestock greenhouse gas emissions, there are few countries – including developed countries – where all the necessary livestock activity data are readily available and of good quality. The tools and methods explained in this guidebook allow countries to compile an initial Tier 2 inventory that is consistent with the IPCC guidelines and prioritise the use of resources for continual improvement. Having a Tier 2 inventory will help countries to comply with the agreements on transparency under the Paris Agreement. It will provide a better basis for identifying mitigation options and tracking change in emissions from the livestock sector.

The Livestock Activity Data Guidance (L-ADG) was developed through a collaboration of the GRA, the FAO, UNIQUE forestry and land use GmbH and CCAFS.

DAIRY HEALTH AND GHG COP25 FACTSHEET

This study shows considerable potential for long-term and lasting cost-effective mitigation of GHG emissions in Chile, Kenya and UK dairy production through implementation of key Animal Health Improvement Measures (AHIM). The potential to include these improvements in a country's Nationally Determined Contributions (NDCs) will be influenced by the design of its monitoring, reporting and verification (MRV) system, including its GHG inventory. Work will continue in the areas of economics and in MRV system requirements in order to include cattle health interventions in NDCs.

Please find the factsheet here. The Factsheet is a research progress update and the final report will be released at a later date.

The Role of Modelling in National Estimation of Livestock Emissions

Countries at the 23rd Conference of Parties (COP23) climate negotiations in Bonn adopted a decision on agriculture that will lead to climate change and food security policy implementation. It established the Koronivia Joint Work on Agriculture (KJWA) to develop strategies for climate change adaptation and mitigation within the agriculture sector. With commitments to the Paris Agreement and the KJWA decision in place, countries must move towards having detailed (at least Tier 2) baselines for livestock emissions. The detailed baseline data will support their Nationally Determined Contributions (NDCs), tools for monitoring, verification and reporting (MRV) and mitigation plans and policies to respond to climate change. Increased requirements have stimulated initiatives that aim to assist countries in the collection of activity data. It has led to the development of diverse models and software to assist in estimating GHG emissions and removals related to Agriculture.

The role of modelling in national estimation of livestock emissions workshop participants

Access to such tools, particularly in the context of MRV and NDC reporting, allows livestock emissions estimates and mitigation targets and strategies that carry substantial influence to policy. There is an urgent need to increase the reliability, accountability and transparency of estimates coming from the different modelling efforts if we are to provide countries with the necessary support.

In response, the GRA, in close collaboration with the New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC) and the Food and Agriculture Organisation of the United Nations (FAO) and the additional financial support of the CCAC and United States Department of Agriculture (USDA), engaged representative countries to ensure a coordinated approach to develop accounting software and models, including the collection and sharing of improved activity data.

As a first step in making models and accounting software more accurate, transparent and useable, the GRA facilitated a consultative workshop that brought together a diverse set of model and accounting software users and technical experts from different countries.

The workshop, hosted by the Indonesian Center for Animal Research and Development (ICARD), reviewed the NDC reporting requirements and actions. Participants assessed the software and models against their specific needs.

The workshop identified capacity development, tool functionality, and data collection methodology priorities. Then it considered elements of a national programme to address these priorities.

The workshop discussed next steps, including: (i) mapping of countries' NDC livestock sector inclusion and subsequent actions; (ii) support and establishment of regional (virtual) networks, tool portals, and ways to exchange experiences and lessons learned; (iii) international support available and organisations involved, and (iv) assessment of the preparedness for inventory work concerning specific countries. Aligned to planned GRA / CCAC / FAO-related capacity building efforts, Kenya, Indonesia and Costa Rica are proposed as regional focus countries in further national consultations and capacity building activities. While focusing on these three countries, there will be a strong element of regional outreach and ongoing national and regional activities.

LRG Networks

ANIMAL HEALTH NETWORK

The Animal Health and Greenhouse Gas Emissions Intensity Network (AHN) is a forum for researchers that investigate the connection between animal diseases and GHG emissions intensity. They explore GHG mitigation opportunities through disease control.

The current global situation caused by the new coronavirus (COVID-19/SARS-CoV-2) shows how important the "One Health" approach (the health of humans, animals and environment) will be for the future of humankind.

The AHN examined GHG mitigation opportunities using the One Health approach to ensure sustainable animal-origin food production. Recently, researchers from the AHN published a review about the connections between dairy cow health and GHGs. Open access of this review is available at https://www.mdpi.com/2624-862X/1/1/3.

Furthermore, the Dairy Sustainability Framework and the AHN began a collaboration. The interested persons came together at FAO (Rome) in April 2019 to discuss future work. The project aims to compare the impact of animal health in the dairy sector between different countries. https://dairysustainabilityframework.org/wp-content/uploads/2019/12/GHG-Dairy-Health-Leaflet-v2.pd.

The network is particularly interested in people from developing countries to participate in the AHN. For more on the AHN or to join, please contact Dirk von Soosten, Friedrich-Loeffer-Institut (FLI), Federal Research Institute for Animal Health, Germany You can also follow the AHN on twitter: **@**AHGHGN

MANURE MANAGEMENT NETWORK

The Manure Management Network (MMN) focuses on reducing livestock GHGs through manure management.

Moving forward of Manure Management Network

The Manure Management Network (MMN) organised an online workshop on 11 March 2020 with 13 experts from different countries joining in. The meeting clarified the objectives, research scope, main activities of the MMN and role of the network coordinator. Also, the MMN agreed on a plan for the next phase of activities, including:

1. Two virtual MMN meetings in May and July to discuss a project once the current stage of Dataman comes to an end

2. A face-to-face MMN meeting at the fringes of the RAMIRAN conference (Cambridge UK, 14-17 September 2020) to determine outputs of the next phase of work and to discuss funding opportunities (this is under review in light of the COVID-19 pandemic)

3. Expand MMN membership to include more representatives from developing countries.

Development of MRV Guidance of Dairy GHG Emissions and Mitigation

To support the objectives of the GRA Livestock Research Group**,** the Institute of Environment and Sustainable Development in Agriculture of the Chinese Academy of Agricultural Sciences and the National Center for Climate Change Strategy and International Cooperation have developed provincial guidance for the measurement, reporting and verification (MRV) of GHG inventories in China. The IPCC Tier 2 Method was the basis for provincial guidance.

To verify the applicability of the Provincial MRV Guidance, case studies were carried out including a dairy cattle GHG emissions inventory for Hebei province and a GHG emissions inventory for an intensive dairy cattle farm. This guidance is expected to support China and other countries to mitigate GHG emissions and progress towards low-carbon dairy production. CGIAR and the New Zealand Government supported this work through the international research project, CCAFS.

For more on the MMN or to join, please contact Hongmin Dong, Chinese Academy of Agricultural Sciences.

LRG Networks

FEED AND NUTRITION NETWORK

The Feed and Nutrition Network (FNN) is a collaborative forum for scientists working on ways to reduce GHG emissions via nutritional means.

Andre Bannink of Wageningen University has taken on the role of FNN Chair with a two-year term supported by co-chairs Alex Hristov of Penn State University and David Yanez-Ruiz of Estación Experimental del Zaidín.

One of the network's key achievements has been the Global Network project that aims to address issues with the available global data on the impact of feed and nutrition on livestock GHGs. FNN scientists have published three new papers associated with the project :

van Lingen, H. J., Niu, M., Kebreab, E., Valadares Filho, S. C., Rooke, J. A., Duthie, C.A., ... Hristov, A. N. (2019) Prediction of enteric methane production, yield and intensity of beef cattle using an intercontinental database. Agriculture, Ecosystems & Environment, 283:106575. https://doi.org/10.1016j.agee.2019.106575

Benaouda, M., Martin, C., Xinran Li, X., Kebreab, E., Hristov, A. N., Yu, Z., ... Eugène, M. 2019. Evaluation of the performance of existing mathematical models predicting enteric methane emissions from ruminants: animal categories and dietary mitigation strategies. Animal Feed Science and Technology 255:114207. https://doi.org/10.1016/j.anifeedsci.2019.114207

Hristov, A. N., Bannink, A., Crompton, L. A., Huhtanen, P., Kreuzer, M., McGee, M. ... Z. Yu. 2019. Nitrogen in ruminant nutrition: a review of measurement techniques. Journal of Dairy Science, 102(7), 5811–5852. https://doi.org/10.3168/jds.2018-15829

Scientists from the FNN will present a meta-analysis of successful strategies that result in reduced enteric methane emissions without compromising animal productivity at this year's ADSA Meeting in West Palm Beach, Florida.

Furthermore, the FNN is currently developing models to predict methane production in sheep based on over 2000 individual animal records from Australia, Brazil, Canada, Egypt, France, Norway, New Zealand, Spain, Switzerland, and the UK. The database covers a wide range of feeding and production systems. The contributors are discussing the results and expect to publish before summer.

For more on the FNN or to join, please contact Andre Bannink, Wageningen University, The Netherlands.

RUMEN MICROBIAL GENOMICS NETWORK

The Rumen Microbial Genomics Network (RMG) is a forum for researchers using genomics approaches to understand enteric methane emissions and how they might be reduced without compromising animal health or productivity.

The Rumen Microbial Genomics (RMG) network held a workshop in August 2019. To start, Professor Huws provided a history of the RMG network and previous encounters. A summary of the two projects resulting from the collaboration of the RMG network, namely the Rumen Census and Hungate Collection, was provided. The Hungate Collection was a significant milestone in understanding the rumen microbiome.

However, there are still gaps in available cultured rumen microbes and plans should concentrate on securing funding for the consortia to focus on culturing these missing microbes.

Members of the network published a review article entitled Addressing global ruminant agricultural challenges through understanding the rumen microbiome: Past, present and future. DOI: 10.3389/fmicb.2018.02161

Due to the COVID-19 pandemic, the next RMG workshop will likely be in 2021. For more on the RMGN or to join, please contact Sharon Huws, Queens University Belfast, United Kingdom.

LRG Networks

ANIMAL SELECTION, GENETICS AND GENOMICS NETWORK

Breeding as a long-term strategy to reduce livestock GHGs is the focus of the Animal Selection, Genetics and Genomics Network (ASGGN), along with identifying how other genetic traits can affect mitigation.

Network members attended the Greenhouse Gas and Animal Agriculture Conference (GGAA) meeting held in Brazil near the spectacular Iguassu Falls in early August as well as the 70th annual meeting of the European Federation of Animal Science in Belgium. At the GGAA, the network chairs were able to discuss network development and mutually beneficial interactions.

On the day before the commencement of the EAAP 2019 meeting held in the historic city of Ghent in Belgium, the ASGGN held a workshop focussed on the areas of methane measurement and prediction, residual feed intake and microbiomes. Much of the hard work was carried out by Larissa Zetouni, who was working on the Enteric Fermentation Flagship for the prediction of methane from microbes in global bovines. The workshop went exceptionally well with some high profile and high calibre presentations. Christine Baes (University of Guelph) outlined the new Canadian strategy for resilient dairy genomics. Leluo Guan (University of Alberta) presented incredible body metagenomic and transcriptomic work in microbial profiling.

Nicolas Gengler (University of Liege) explained statistical machinery and methods to predict from near infra-red mid-infra-red predictors in meat and milk. Michael Aldridge (Wageningen University) discussed statistical power requirements for methane breeding programs. John McEwan (AgResearch, New Zealand) chaired a very successful workshop on the challenges faced in handling, processing, and sharing microbial samples to achieve large global datasets. The discussion highlighted areas where working together is crucial for success, plus members formed new collaborations and friendships.

You can now follow the network on twitter https://twitter.com/ASGGN_GRA for further updates on network member projects including the Enteric Fermentation Flagship offering opportunities for microbial sequencing in cattle and the newly funded global Grass to Gas project developing strategies to mitigate GHG emissions from pasture-based sheep systems.

Zoom will be used for this year's workshop. Details will be released on Twitter. In the meantime, if you are interested in proposing a topic, speaking or just getting to know us better don't hesitate to get in touch via the website or directly to Suzanne Rowe, AgResearch, New Zealand.

Supporting the Intergovernmental Panel on Climate Change (IPCC)

The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. Critical work is underway, and the LRG community is encouraged to actively engage.

The IPCC approved and released two Special Reports in 2019. The first report on Climate Change and Land covers greenhouse gas fluxes between the terrestrial biosphere and the atmosphere and interactions between climate change and desertification, land degradation and food security. The second report on Climate Change, the Oceans and the Cryosphere covers issues related to climate change and ocean ecosystems, updated projections for loss of land-based and sea ice and sea-level rise, and risks to coastal and mountain communities.

Drafting the full 6th Assessment Report has begun which is scheduled for completion in 2021. Dr Harry Clark has been selected as a Working Group III Lead Author for the chapter on mitigation in agriculture, forestry, and other land uses.

The NZAGRC appointed two postdocs to support the international work of NZAGRC. They will provide both a supporting role for Harry Clark as lead author for the IPCC and also contribute to broader integrative research and analyses that are coordinated by NZAGRC and will be undertaken jointly with international GRA partners. This work, led by Jeroen Dijkman, on livestock and sustainable agri-food system futures, will support the objectives and narrative of the GRA and some early outputs will also serve as input to the IPCC AR6 assessment.

Post-Docs Supporting the IPCC

JEREMY EMMET-BOOTH

Having worked on farms from an early age and being passionate about nature and environmental conservation, I studied Organic Farming at the Royal Agricultural University at Cirencester in England. There, the fundamental importance of soil as the basis of agriculture and many other functions that humankind entirely relies on really struck me. I was keen to promote sustainable soil management and was delighted to be part of a national survey of soil quality in Ireland while developing methods that farmers and agricultural advisors could use to help on-farm soil management. This formed the basis of my doctorate.

With growing global concern on GHG emissions, I jumped into broader sustainable agriculture and climate change research. Working with NZAGRC, as a chapter scientist for the IPCC Sixth Assessment Report chapter on agriculture and land, is an exciting role and one that I am thoroughly enjoying.

CARLOS GONZALEZ FISCHER

I earned my PhD in Biological Sciences from the University of Buenos Aires and have been studying different aspects of the relationship between food production and the environment for over 15 years.

I started my career describing land-use change patterns following the soybean expansion in the Pampas of Central Argentina. For my thesis, I studied how those land-use changes affected small mammal communities, birds and other vertebrates. After finishing my PhD, I moved to the UK where I worked with NGOs and UN agencies to describe what a sustainable food system looks like and to explore ways to get us closer to that goal. After 5 years in the UK – and after becoming a father - I went back to Argentina and academia to study the environmental impact of different beef production systems.

My work as chapter scientist for the IPCC aims to understand what the livestock sector may look like in a world that limits global warming within the temperature goal of the Paris Agreement.

Highlights from CCAFS

CCAFS currently has six low-emissions development (LED) projects related to livestock. Across three continents and more than 10 countries, these projects are helping to implement improved livestock and pasture management, social equity, circular economy of manure management as well as enhancing capabilities to monitoring, reporting and verification (MRV).

UPSCALING LOW-EMISSIONS DAIRY DEVELOPMENT IN ASIA

WUR scientists are testing and upscaling LED options in small-scale dairy farms in Indonesia and large-scale dairy farms in China. By improving feeding, fodder production, and manure management at the farm and regional levels, strategies developed in this project contribute to mitigating GHGs through improved resource-use efficiency and contributions to the circular economy, while increasing farm productivity, income, and livelihoods.

DEVELOPING A LOW-CARBON LIVESTOCK VALUE CHAIN IN LATIN AMERICA

CIAT is bringing together multi-disciplinary stakeholders to strengthen South-South collaboration among livestock value chain actors in seven target countries through the Latin America Mitigation Network (LAMNET). The research is fostering low-carbon business models, feasible monitoring, reporting and verification (MRV) approaches, public-private partnerships and finance schemes that incentivise the implementation of promising LED innovations in the livestock sector.

ESTABLISHING SOCIAL EQUITY IN CLIMATE SMART LIVESTOCK INTERVENTIONS

In Ethiopia, ILRI researchers are evaluating households' abilities to intensify and commercialise livestock-based production, exploring the gendered implications for access to resources and benefits. The research is building the capacity of civil society organisations to engage in national livestock mitigation dialogues, especially in terms of social equity safeguards and NDC implementation. Activities and deliverables under the NWO-GCP-funded project I-LED have also been folded into this project.

ADOPTING CLIMATE-SMART LIVESTOCK SYSTEMS IN AFRICA

Through the Program for Climate Smart Livestock Systems (PCSL), ILRI scientists support interventions to enable key livestock stakeholders to direct their livestock practices, sector strategies and policies towards the achievement of climate-smart livestock systems in the three focus countries: Kenya, Ethiopia and Uganda.

SUSTAINABLE LIVESTOCK ACTIONS MRV IN EAST AFRICA

UNIQUE-Forestry and Land Use, UNE and ICRAF are supporting large-scale implementation of low-emission livestock development in Kenyan and Ethiopian NDCs. They are providing practical guidance on MRV project implementation to agencies and national entities. Ultimately, the project is helping developing countries achieve their NDC targets and increase access to finance for LED. Activities and deliverables supported by ACIAR (SRA), "Building capacities for an integrated livestock MRV system in Ethiopia," have also complemented this project.

IMPLEMENTING LOW EMISSION LIVESTOCK DEVELOPMENT IN VIETNAM

Funded by USDA, CCAFS scientists and Vietnam's national partners are managing cattle to improve productivity and promote LED. The EC-LEDS project Vietnam team is working with the Department of Livestock Production, National Agricultural Extension Center and country NDC team to scale up improved livestock feed ration software, livestock forage database and improved seasonal and regional feed ration guidance.

For more on CCAFS, please contact Ciniro Costa Junior, CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

CGIAR | RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security | CCAFS

Scholarships

CLIFF-GRADS

The Climate, Food and Farming, Global Research Alliance Development Scholarships Programme (CLIFF-GRADS) is a joint initiative of the GRA and the CCAFS Low Emissions Development (LED) Flagship. CLIFF-GRADS builds capability in early career scientists from developing countries to conduct applied research in agriculture GHG emission quantification, modelling and mitigation, relevant to developing countries.

Applications for Round 4 closed on 1 April 2020 and 54 research opportunities in livestock, soil, rice, modelling and agroforestry were advertised to students from developing countries. Over 200 applications have been received and are under review.

Nearly 300 applicants from 42 developing countries applied in Round 3, and 31 early-career scientists from 14 developing countries received CLIFF-GRADS awards.

The increasing number of research opportunities and applicants show that the CLIFF-GRADS Programme is increasing in prestige and and becoming more visible internationally.

To read more about CLIFF-GRADS, see here.

NZ-GRADS

The GRA is pleased to announce the launch of the New Zealand Global Research Alliance Doctoral Scholarship (NZ-GRADS) programme.

NZ-GRADS is a PhD scholarship offered to science students from developing countries to complete their PhD at a New Zealand university. The PhD research topics must be related to GHG emissions from agricultural systems, primarily livestock, but innovative and novel aspects of this will be considered, especially related to new technologies or new applications of existing technologies.

These PhD students would be actively supported through various extension and networking events hosted by the GRA and Education New Zealand.

For more information on NZ-GRADS, see here.

LEARN AWARD OPPORTUNITIES

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 GRA.

LEARN is focused on:

- Supporting technical staff and scientists from developing countries and GRA member countries to work alongside New Zealand colleagues.

- Sharing knowledge on livestock GHG emissions measurement, modelling 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 GRA as well as relevant New Zealand science priorities.

- Advancing common research interests between countries and building enduring relationships.

There are currently two LEARN awards:

- LEARN Technical Training Award

- Global Research Alliance Senior Scientist (GRASS) Award

These awards are assessed on a quarterly basis, following a two-stage application process. The next two closing dates for full applications are 30 July 2020 and 30 October 2020. All applications must be developed in close collaboration with a New Zealand research institution. For more information, please see www.livestockemissions.net

Please note that applications for LEARN Co-funded PhD Scholarships and LEARN Postdoctoral Fellowships are not being taken at this time.

Jie Li
LEARN Award Recipient

Jie Li, LEARN Award Recipient

As a LEARN co-funded PhD Scholarship recipient, Jie Li is an excellent example of how scientific knowledge exchanges can benefit the international research community.

The LEARN co-funded PhD Scholarship enables students from developing countries to undertake part of their PhD in New Zealand. Recipients perform research aligned with livestock GHG mitigation.

While working on her PhD in China, Jie came to New Zealand between 2012 and 2015 to find ways to help farmers increase nutrient use efficiency when applying dairy farm effluent. The supervision of Jie's PhD was shared between China and New Zealand before she graduated from the Institute of Applied Ecology at the Chinese Academy of Sciences.

In New Zealand, she was supervised by Drs Jiafa Luo, David Houlbrooke and Stewart Ledgard from AgResearch at Ruakura.

Jie's PhD thesis focused on understanding the extent and seasonal variation of ammonia (NH_3) and nitrous oxide (N_2O) losses from the application of different types of farm effluents to pasture. Also, she evaluated the potential for urease (UI) and nitrification inhibitors (NI) to reduce gaseous nitrogen losses from New Zealand pastoral soils.

Jie found that applying different types of effluent to pasture soil led to increased evaporation of NH_3 into the atmosphere and N_2O emissions. Her study also illustrated that inhibitors could be useful in reducing NH_3 and N_2O emissions when applying dairy effluents to the paddock.

The project identified technologies for farmers to increase nutrient use efficiency and to reduce nutrient losses after application of farm effluent or manure.

Now a junior scientist based at the Institute of Applied Ecology, Chinese Academy of Sciences, in Shenyang, China, Jie is applying the knowledge gains from New Zealand to benefit her home country.

"Since I came back, I have been able to draw on my PhD experience in many ways. I am currently working on three projects that are about the effects of inhibitors on soil nitrogen transformations and new fertiliser development," she says.

Jie says her LEARN experience in New Zealand equipped her to undertake such research. She gained knowledge and expertise in N_2O and NH_3 emission measurements, the use of nitrogen process inhibitors, novel fertiliser development, the use of Overseer (New Zealand's nutrient budget model) and other related agricultural and environmental research. She is still applying those learnings.

"Last year, I got funding from the National Natural Science Foundation of China for a study in which black soil, collected from the northeast part of China, will be used.

"The soil is classified as Alfisol (Soil Taxonomy) or Luvisol (World Reference Base) and is the primary soil type for agricultural production in my work region.

"We will be determining the effects of nitrification inhibitors, comparing nitrogen loss from fertilisers and the original soil."

Jie says she remains good friends with the New Zealand scientists she worked with and is always in touch, including receiving visits from Kiwi colleagues.

"The LEARN co-funded PhD Scholarship enabled me to acquire valuable experience and skills in greenhouse gas research, to visit research centres and universities in New Zealand and facilitate the transfer of knowledge between institutions.

"Access to world-class knowledge and facilities in New Zealand gave me the skills that allow me to carry out related research and share those gains with my Chinese colleagues. I greatly appreciate this programme; it has been a wonderful experience."

Upcoming Events

71ST ANNUAL MEETING OF EUROPEAN FEDERATION OF ANIMAL SCIENCE

The annual meeting theme is "Farming for carbon neutral livestock systems".

31 August to 4 September 2020
Porto, Portugal (or virtual)
https://www.eaap2020.org/

ICOS SCIENCE CONFERENCE 2020

The overarching theme for this year's conference is "Knowledge for shaping the future – understanding the Earth's biogeochemical processes".

15 to 17 September 2020
Utrecht, The Netherlands (or virtual)
https://www.icos-cp.eu/news-and-events/science-conference/icos2020sc

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