



## **Paddy Rice Research Group Americas Sub-Group Meeting**

**Jonesboro, Arkansas, USA**

12-14 July 2022

For questions on this report, please contact [secretariat@globalresearchalliance.org](mailto:secretariat@globalresearchalliance.org).

# **Meeting Report**

## **MEETING OVERVIEW**

The 2022 meeting of the Paddy Rice Research Group's (PRRG) Americas sub-Group of the Global Research Alliance on Agricultural Greenhouse Gases (GRA) was held at the Red Wolf Convention Centre, Jonesboro, Arkansas, USA from 12-13 July 2022 and followed by field visits on 14 July 2022. The meeting was chaired by Dr. Alvaro Roel and Dr. Arlene Adviento-Borbe, respectively Co-Chair of the PRRG and Co-Lead as well as USDA-ARS Representative for the GRA PRRG Americas sub-Group. Eduardo Graterol, additional Co-Lead of the Americas sub-Group was unable to attend the meeting in person and attended virtually.

There were two major goals for the meeting, to share collaboratively the extent of research efforts among countries of the sub-Group and to use the meeting and existing efforts to develop new projects or initiatives.

This report is a summary of the key discussions and outcomes of the meeting. PDFs of the presentations are provided separately on the [GRA website](#). A list of key acronyms used in this report is attached as appendix 5.

## **PARTICIPANTS**

The meeting was attended by 34 participants in person, and 46 participants virtually, representing fifteen countries and six partner organisations of the Group (appendix 1). Several invited representatives from institutes of the host country also attended the meeting.

- GRA Member countries attending: Argentina, Brazil, Chile, Colombia, Costa Rica, Ghana, Japan, Kenya, Mexico, Peru, Philippines, Senegal, Uruguay, USA, Vietnam
- Invited representative organisations: RiceTec, New Leaf Symbiotics, NERREC, GCF, WRI, EDF, DBNRRC, University of Arkansas & Arkansas State University

## MEETING OUTCOMES

The meeting achieved the following outcomes:

- Identification of significant financial resources include the GCF, WRI and the GMH. Representatives of these groups outline funding will be made available for clearly defined research projects, of global relevance and multilateral participation, which will develop new scientific knowledge, validate approaches, methods or hypotheses and have high scientific impact.
- **Development of an initial Americas sub-Group research project proposal outline**, for seeking funding to support a full research proposal development. The proposed project title is: *Climate-smart intensification of rice production in the Americas*. The project would i) increase regional baseline data, ii) determine the most effective ways of reducing anaerobic time for rice production in each country, iii) package management practices with core essential research and evidence-based management recommendations, iv) design appropriate incentive structures for each country, and v) validate recommended strategies at field scale.
- An initial scoping of the **measurement equipment and measurement capability needs of the countries in the Americas** was completed for further supplementation by countries not present and additional national experts from countries represented.
- It was agreed that the **Americas sub-Group leadership will identify and contact representatives of other countries in the Americas who are not yet engaged in PRRG activities and research efforts**. The group agreed that non-GRA member countries would also be welcomed. Current GRA member countries in the Americas include: Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, United States of America and Uruguay.

## OPENING REMARKS

The first day of the meeting of the Paddy Rice Research Group (PRRG) Americas sub-Group was Chaired by Dr. Arlene Adviento-Borbe and Dr. Alvaro Roel, co-Chairs of the Americas sub-Group. The second day of the meeting was chaired by Dr. Michele Reba. The third Americas sub-Group co-Chair, Dr. Eduardo Graterol, was unable to attend the meeting in person and attended virtually. Opening remarks for the meeting were received by Dr. Marlen Eve and Mr. Archie Tucker of the USDA ARS, and Dr. Thomas Risch of Arkansas State.

## COUNTRY REPORTS AND RESEARCH ACTIVITY UPDATES

Attendees of the meeting provided research update presentations from partner organisations: FLAR, CIAT, USDA-ARS, and New Leaf Symbiotics.

Country representatives of Argentina, Brazil, Colombia, Chile, Peru, Uruguay and the USA also provided an update on national research and research needs.

## PRRG ASIA SUB-GROUP UPDATE

Dr Yasukazu Hosen, current Chair of the Asia sub-Group PRRG, provided an overview of the Group's activities to date including recent achievements and ambitions.

Key achievements:

- The MIRSA project is almost at the end of its third phase. Long term research in this phase has explored local cultivars, organic matter application, soil carbon and nitrogen. Early discussions are considering a fourth phase of the project.
- MAFF, Japan and the USDA-ARS are commencing in late 2023 a new project titled “Innovation of paddy field management for simultaneous reduction of methane emissions and grain arsenic in rice-paddy soil systems by understanding the role of microbes” (tentative). The objectives of the project are to reduce CH<sub>4</sub> emissions and also the inorganic arsenic content of rice, which contributes ~66% of arsenic intake in Japan’s population. The collaboration will facilitate research experiment data from both the tropics and temperate regions.

## PRRG AFRICA SUB-GROUP UPDATE

The PRRG Africa sub-Group is undergoing re-organization and the GRA Secretariat are coordinating engagement with interested institutions to participate and lead work for the PRRG Africa sub-Group. Many African countries have expressed interest to participate in rice related research including Mozambique which hosts the Rice Centre of Excellence for Southern Africa. (Update provided by the GRA Secretariat).

## SUMMARY OF DISCUSSIONS

The discussions began with an overview of the available resources, priorities, and interest to support rice by GCF and WRI. Representing the GCF was Gabriel Boc, and Tim Searchinger attended as an advisor to the WRI. Christian Delgado presented initial results of his PhD project assessing methane production from rice in the Americas, using satellite data. His work is relevant to rice researchers in the group because of potential future applications in rice research. He will travel to New Zealand in October to work with researchers in the New Zealand METHANESAT programme from Otago University and NIWA.

The subsequent discussion sessions were broken into three parts. The **first** session facilitated a group discussion on national research and mitigation priorities and their main barriers and guided the structure of the second breakout session. The **second** session facilitated three separate breakout discussion groups, in separate rooms (virtual and in person), on priorities and gaps as they relate to the rice research themes of management, measurement, and core biological research in the Americas, and globally. The **third** session facilitated a summary of the conclusions of each of the three breakout sessions, and design of the basis of a large and multilateral research proposal. All the sessions during the second day focused on linking GRA rice scientists to all participants on current and emerging GHG research, funding opportunities and support for technical and measurement infrastructure/instrumentation.

## WORKPLAN DEVELOPMENT

The proposed title of the multilateral research proposal is: *Climate-smart intensification of rice production in the Americas*. Initially, six working group focus areas have been identified and group members and interested institutes are encouraged to contribute. From early-stage development of the project, it is designed well for consideration by the GRA Council as a GRA Flagship project. If the final project proposed is endorsed by the Council, it will increase visibility for resourcing, encourage broader multilateral engagement, and increase the global relevance and impact of project outcomes. For further details, and to express interest to participate, please contact the co-Chair of

the PRRG, Dr. Alvaro Roel at INIA (aroel@inia.org.uy) as well as the lead scientists of the relevant working group.

The six working groups are below (further detail can be found in Appendix 2):

- WG1: Climate smart management
  - Dr. Alvaro Roel (aroel@inia.org.uy); Dr. Joseph Massey (joseph.massey@usda.gov)
- WG2: Quantification
  - Dr. Arlene Adviento-Borbe (arlene.advientoborbe@usda.gov), Dr. Michele Reba (michele.reba@usda.gov), Dr. Benjamin Runkle (brrunkle@uark.edu)
- WG3: Remote sensing and modeling
- WG4: Genetics and biological solutions
  - Dr. Anna McClung (anna.mcclung@usda.gov)
- WG5: Socioeconomics
- WG6: Overarching management

During the discussions, the group identified some overarching priorities for all areas of rice GHG emission research, including the capacity of each country to conduct GHG research, the available support for technical and instrumentations, field-based GHG mitigation strategies for rice, the need to determine effective incentivization programmes, tailored to each individual country's production and national circumstances. Identifying the economic thresholds where loss in yield could be acceptable in crops with reduced emissions is also crucial, provided there are appropriate implementation plans and incentivization packages. The following research priorities were identified by each breakout group in the second session:

#### **Measurement (eddy covariance towers, chambers, water use, remote sensing etc.)**

1. It is crucial that all member countries have the capacity to conduct field measurements of GHG emissions in rice. While the USA leads the quantification of GHG emissions using both EC and chamber methods, some member countries like Peru lack the instruments and infrastructure to quantify GHG emissions in the field. Experts in the quantification of GHG using EC method are lacking in member countries in Latin America. These limitations should be realized by the leadership of GRA prior to the implementation of GHG database upscaling, model validation and development of decision support tool for mitigation. Establishment of seed grants for GHG studies to start up countries like Peru, Uruguay and Chile could improve participation of these countries to regional reduction of CH<sub>4</sub> efforts.
2. There is a need for a centralized measurement database for rice emission measurements which could be used to assess trends across countries in the Americas and perhaps globally. Field data exists in some of the PRRG member countries in the Americas. The database would need a measure of the quality of data, so that data can be either left out if it does not meet sufficient standard for future analyses, or the uncertainty can be minimized if included. Establishing a database could be impacted by data sharing concerns, only published data could be shared openly for any interested user. There are establishment and ongoing maintenance costs of such a database.
3. Current emission models are inaccurate for emission estimates when applied to countries in the Americas due to the models using estimated data. There is a need for a process-based model that is crop specific and system specific that will accurately predict emissions from rice production in all global regions, developed using field measurements and validated at field scale.
4. Each of the countries attending the PRRG Americas sub-Group meeting have strong links and engagement with their local producers but are hindered by measurement equipment and

training needs. Many countries do not have flow meters so cannot validate levels of irrigation and thus emissions estimates and measurements.

### **Management (water, soil, nitrogen fertilization, residues etc.)**

1. Efforts of managing GHG emissions in the context of mitigation and adaptation are intrinsically interrelated and need to occur simultaneously.
2. There is no single management solution. Solutions for reducing emissions need to be country specific and cater to large amounts of variability in field operations and production that are relevant for different aspects of rice production management. Universally, all efforts will look at various ways of reducing the anaerobic period during production by changing planting strategies (e.g., using direct seeding vs. transplanting). A single AWD drying event is not an easy universal prescription for reducing methane across rice production systems because not all rice fields in the Americas regions are precision grade levels.
3. Incentive structures need to be as variable as the different management practices across countries, and appropriate for variable economics of water across countries.

### **Core research (genetics, biologicals etc.)**

1. Water scarcity and increasing air temperatures are the greatest challenges facing rice producers currently and will remain to be into the future. Core research therefore will continue to be focused on these priority issues.
2. The group identified the need to do a large global scale phenotyping exercise to identify indicators of rice cultivars that have the best combination of high-water use efficiency (low CH<sub>4</sub> emissions) and sustainable yield. A suggested sufficient sample was ~300 globally. Outcomes will be deriving an ideal plant ideotype, and phenotyping the traits most telling of this ideotype, and traits that can serve as a proxy to predict CH<sub>4</sub> emissions (for example root length).
3. Microbiome research is necessary and required to enhance the understanding, management, and application of rhizosphere microbial communities to target both CH<sub>4</sub> reduction.
4. Constraining the isotopic signature for rice CH<sub>4</sub> production was also identified to be very valuable for the global rice emission research community.

Based on the research priorities and needs identified in the second discussion session, the group developed an initial project proposal outline in the third discussion session, which could form the basis of proposal(s) for funding support to develop a large-scale, multi-country mitigation project. It was discussed that the proposal could be all or some combination of lowering the cost of accessing finance, assisting farmers to access flow meters or other necessary equipment, designing an in-hand financial incentive on an activity basis (as opposed to carbon credit systems which present complex problems) or fund changes in management practice, or valorizing emissions. The proposal needs to demonstrate near-term and long-term technological innovation and provide an evidence base for addressing the question of what rice producers will need be doing 5 years from now to maintain and in some cases improve yield while mitigating GHG emissions from rice production. In addition, research objectives could focus on:

- **Increasing regional baseline data** using paired field studies for example at multiple field locations and multiple timings, including data on water application, yield, emissions for each country.
- **Determining the most effective ways of reducing anaerobic time for rice production** in each country. Packaging management practices with evidence-based recommendations of genes of sustainable and climate resilient rice cultivars will be compelling to support this objective.

- **Design of an appropriated incentive structure.**
- **Validating recommended emission mitigation and management** strategies at field scale.

**Participation:** Other non-GRA members from the Americas should be welcomed to the project as it presents a good opportunity for wider involvement and improvements to national prioritization and focus on agriculture emissions from rice.

## UPDATE FROM THE GRA SECRETARIAT

The GRA now has 66 Member Countries, and 24 research partner organisations. Kenya was the latest country to join and the SAI Platform was the latest Partner to join.

### Key outcomes from the 2022 GRA Council meeting:

- Spain accepted the Vice-Chair role and will therefore be Council Chair for 2023 and host the next GRA Council Meeting in Spain in 2023
- New Zealand continues to host the GRA Secretariat and Special Representative role.
- Research Group reports: Experts from the PRRG are encouraged to notify the Secretariat of key achievements of the PRRG for the research stocktake.
- The Council invited the Environmental Defence Fund (EDF) to become an official partner at the Council Meeting.

### GRA Flagship projects:

Six [flagship projects](#) were endorsed by the Council and their individual focus and participating countries are below. More details on the requirements for consideration by the GRA Council as a flagship project are included in appendix 3. Establishment of a project as a GRA flagship increases visibility for resourcing as well as broader multilateral engagement and thus increases the global relevance and impact of project outcomes. Applications of remote sensing technologies and nitrogen fertiliser have the greatest relevance to the PRRG.

- Economics of GHG Mitigation at farm level in global cattle production systems (Argentina, Australia, Bangladesh, Canada, Germany, Peru, South Africa)
- Remote Sensing in Grasslands (Argentina, Canada, Costa Rica, FONTAGRO, New Zealand, Uruguay)
- Nitrogen Fertiliser Emissions (Canada, Chile, Costa Rica, FONTAGRO, New Zealand, Spain)
- Feed Additives (Canada, Ireland, Netherlands, New Zealand, Spain, US, Zimbabwe)
- Hungate Collection 2 (Canada, Colombia, Ireland, New Zealand, UK)
- Mitigation and Adaptation Co-Benefits (MAC-B) – with AGMIP

### GRA Secretariat support to PRRG:

- The GRA Secretariat have more capacity to assist with Group activities including coordination and management of in-person and online events. For example the GRA can host events on the Secretariat Zoom account, manage registrations, send out invites and reminders via wide research networks and on the GRA Twitter account etc.
- The Secretariat have coordinated CLIFF-GRADS alumni volunteer contributions to the management of the Research Groups and Research Networks. This can assist co-Chairs and co-Leads with the coordination and development of events and research activities. Please contact the coordinator at [cliffgrads@globalresearchalliance.org](mailto:cliffgrads@globalresearchalliance.org).

### GRA Research Group and Research network activities:

- [I&NDC Network](#): three webinars on i) [national inventory policy applications](#), ii) [data collection for national inventories](#), and iii) the [process of commissioning research for national inventories](#).

### GRA Website:

- **E-Learning**: <https://globalresearchalliance.org/e-learning/>. Three learning modules are now available for people interested in building their general knowledge related to the underlying processes and mechanisms of agriculture GHG emissions, IPCC reporting guidelines for national inventories and the UNFCCC reporting processes.
- **GRA Flagship Projects**, as described above: <https://globalresearchalliance.org/flagship-projects/>

### GRA Awards:

- The [CLIFF-GRADS call for student applications is open](#) and members of the PRRG are encouraged to notify students in their networks (**closing 1 September 2022**). There are 61 research visit opportunities being advertised, three relate to rice (below) and numerous others relate to emission research relevant for rice researchers. For more information on the CLIFF-GRADS Programme, see appendix 4.
  - *Costa Rican rainfed rice system adapted to a transplant phase and its effect on soil carbon and on N<sub>2</sub>O sources.*
  - *Sustainable rice cultivation to reduce methane emission on soil affected by seawater intrusion*
  - *Carbon labelling on exported food products from rice cultivation and aquaculture in the Vietnamese Mekong Delta*
- A special round of the [NZ-GRADS call for student applications](#) to complete a full PhD in New Zealand is open. There are no rice projects however there are two projects related to N<sub>2</sub>O which may be relevant for members of the PRRG.
- The African RUFORUM programme currently has no projects on rice however this will likely change in the next round (2023 – 2025).

## UPCOMING MEETINGS

- There are no planned meetings for the PRRG Asia or Africa sub-Groups yet.

# APPENDIX 1: PARTICIPANTS LIST

Country	Researcher/Specialist	Organization
Argentina	Esperbent, Ceci	INTA (National Institute of Agriculture Technology)
	Herber, Luciana Graciela	INTA (National Institute of Agriculture Technology), Research Professional
	Maciel, Susana Noemi	EEA INTA, Professional Investigator
	Marano, Anibal E.	ORYZA S.A., Agronomy Engineer
	Quintero, Cesar Eugenio	Universidad Nacional de Entre Rios
	Romero, Sanchez, Miguel Antonio	Alliance of Biodiversity International and CIAT, Research Fellow
Brazil	Ananias Soler-Silva, Mellissa	EMBRAPA, Researcher in Sustainable Agriculture Systems
	Scivittaro, Walkyra	Brazilian Agriculture Research Corporation / EMBRAPA, Researcher
Chile	Donoso, Gabriel	Agricultural Research Institute, Researcher
	Hube, Sara	Instituto de Investigaciones Agropecuarias, Analytical Chemist, Research Assistant
	Becerra, Viviana	INIA, Researcher
Colombia	Alvarez, Maria Fernanda	Alliance of Bioversity International and CIAT, Rice Research Leader
	Andres Pulgarin Gomez, Carlos	ERT
	Delgado Fajardo, Cristhian Camilo	FLAR, University of Otago, Consultant in data science, PhD student
	Escobar-Valdes, Ximena	CIAT, Coordinator
	Gallego Gutiérrez, Lorena	FLAR, Communications
	Garces, Gabriel	Fedearroz, Researcher - Extensionist
	Graterol, Eduardo	Latin American Fund for Irrigated Rice (FLAR), Executive Director
	Loaiza Mera, Sandra Patricia	Pontifical Xavierian University and CIAT
	Lozano Castro, Nelson Enrique	Ministerio De Agricultural Y Desarrollo Rural
	Rojas Ruiz, Alexander	Fedearroz, Meteorologist - Head of Rice Climate Service
Costa Rica	Trujillo, Catalina	Alliance of Biodiversity International and CIAT, Research Associate
	Peguero, Felipe	CATIE
	Perez-Castillo, Gabriela	FONTAGRO
Ghana	Boateng, Kofi	Researcher
Japan	Hosen, Yasukazu	Co-Chair, PRRG Asia Subgroup, National Institute for Agro-Environmental Sciences (NIAES), NARO
Kenya	Mcharo, Mwamburi	Taita Taveta University
Mexico	Barríos, Edwin	INIFAP, Researcher
Peru	Heros Aguilar, Elizabeth Consuelo	Universidad Nacional Agraria La Molina, Professor
	Ramos Fernandez, Lia	Universidad Nacional Agraria La Molina, Principal Professor, Research Leader
Philippines	Wassmann, Reiner	IRRI, Cluster Leader, Foresighting and Policy Analysis
Republic of Korea	Boc, Gabriel	GCF, Senior Agriculture and Food Security Specialist



Senegal	Fall, Alioune	Senegal Institute of Agricultural Research (ISRA), Director General
Uruguay	Bueno, Marcos	INIA, Researcher
	Campos, Federico	INIA, Researcher
	Carracelas, Gonzalo	INIA, Researcher
	Roel, Alvaro	INIA Uruguay, Research Specialist, GRA Co-Advisor PRRG Americas
	Terra, Jose	INIA Rice Program Director
USA	Adviento-Borbe, Arlene	USDA/ARS/DWMRU
	Ahuja, Richie	Environmental Defense Fund, Associate VP, Climate-Smart Agriculture
	Anders, Merle	Net Profit Crop Consultant, PLLC, Consultant
	Burcham, Timothy N.	U of A, Director of Northeast Rice Research and Extension Center
	Cutrano, Chance	Resource Renewal Institute, Director of Programs
	Della Lunga, Diego	University of Arkansas, Research Associate
	Edwards, Jeremy	Dale Bumpers National Rice Research Center, Research Geneticist (Plants)
	Eve, Marlen	Deputy Administrator, Natural Resources and Sustainability Systems, USDA-ARS
	Hashem, Ahmed	Arkansas State University, Assistant Professor
	Hinga, Melissa	RiceTec, Inc., Traited Handoff Line Manager, Parent Line Increase
	Jimenez, Desmond	NewLeaf Symbiotics
	Karki, Sandhya	University of Arkansas, Biological & Agricultural Engineering
	Kongchum, Manoch	LSU AgCenter Rice Research Station, Associate Professor
	Kraft, Tanjia	Arkansas State University
	Kritee, K	Environmental Defense Fund, Senior Scientist and Senior Manager
	Lorence, Argelia	Arkansas State University
	Massey, Joseph	USDA/ARS/DWMRU
	McClung, Anna	USDA ARS SEA, Research Geneticist
	Moreno Garcia, Beatriz	University of Arkansas, Biological & Agricultural Engineering
	Moskowitz, Deborah	Resource Renewal Institute, President
	Payne, Geoffrey	DWMRU USDA ARS
	Pinson, Shannon	Dale Bumpers National Rice Research Center, Research Geneticist (Plants)
	Plaza, Jose	RiceTec, General Manager
	Prasad, Bishwajit	RiceTec, Inc., Director, Breeding Optimization
	Reavis, Colby	University of Arkansas
	Reba, Michele	USDA ARS, Research Hydrologist, Acting Research Leader
	Risch, Thomas	Arkansas State University, Director ABI
	Rosenblum, Micah	Program Monitoring, Evaluation and Strategic Planning Division, Global Programs Foreign Agricultural Service, USDA
	Rudek, Joe	Environmental Defense Fund, Lead Senior Scientist
	Runkle, Benjamin R.K.	U of A, Assoc. Professor Biological & Agricultural Engineering

	Searchinger, Timothy	Princeton University / World Resources Institute
USA	Sprinkle, Jonathan	New Leaf Symbiotics
	Tauzel, John	Environmental Defense Fund, Senior Director, Global Agriculture Methane
	Tucker, Archie	Area Director, Southeast Area Research, USDA-ARS
	Watson, Brittany	USDA/ARS/DWMRU
	Williamson, Tim	RiceTec, Marketing Director
	Wollenberg, Lini	CGIAR / University of Vermont
	Yulin, Jia	Dale Bumpers National Rice Research Center, Acting Center Director/Research Leader
Vietnam	Nguyễn Thanh, Vân	Institute of Agricultural Science for Southern Vietnam
GRA	Monjol, Joanne	Secretariat / Ministry for Primary Industries
	Montgomery, Hayden	Special Representative
	Tomlin, Hazelle	Secretariat

# APPENDIX 2: MULTILATERAL RESEARCH PROPOSAL (*in development*)

Proposed project title: *Climate-smart intensification of rice production in the Americas*

WG	Priorities	Contributors
<b>WG1 – Climate smart management</b>	Design locally appropriate solutions How representative are local solutions? Which mitigation is adaptation?	Joe Massey (US), Alvaro Roel (UR), Gabriel Garces (CO), Gabriel Donoso (CH), Walkyria Scivittaro (BR), Elizabeth Aguilar (PE)
<b>WG2 - Quantification</b>	Paired field studies - LTAR approach (Baseline / Sustainable) Water use GHGs (EC / Chamber) Nitrogen	Arlene Adviento-Borbe (US), Catalina Trujillo (CO), Benjamin Runkle (US), Alexander Ruiz (CO), Michele Reba (US), Sara Hube (CH), Colby, Gabriela, Elizabeth Aguilar (PE), Susana Maciel (AR)
<b>WG3 - Remote sensing and modelling</b>	Remote sensing Modelling Practical product (MRV)	Cesar Quintero (AR), Cristhian Delgado (CO), Alexander Ruiz (CO), Jesus Castillo (Uruguay)
<b>WG4 – Genetics and biological research</b>	Basic research Diversity panel (including drought adapted germplasm) Plant ideotype High throughput phenotype Microbiome	Anna McClung (US) Melissa Hinga (RiceTEC, US) Desmond Jimenez (NLS, US) Ana Fernandez (Uruguay)
<b>WG5 - Socioeconomics</b>	Farm enterprise budget Incentive structures Exchange across WGs	
<b>WG6 – Overarching management</b>	Data management Education/training Communication Exchange among countries	

## APPENDIX 3: GRA FLAGSHIP PROJECTS

The following criteria form the basis for which a proposed Flagship Project will be assessed, and recommended to Council for endorsement, including project scope, participation, research and resourcing. A Flagship Project template (available from the GRA Secretariat) is to be completed by the Flagship Project lead and once endorsed, the Flagship will be profiled on the Alliance website. Once completed, final outcomes will be presented to the Council.

- **Project Scope:** Project timeline (defined end date) specified, project outcome defined and globally applicable.
- **Project Participation:** The project will benefit from Alliance wide collaboration and where possible global participation in their delivery. The project will have an identified community of experts within Alliance Membership (i.e. be proposed by one of the Research Groups, or their Networks, or have key Members act as coordinators if the Flagship Project focuses on a cross-cutting issue). The project will provide a range of collaboration opportunities, including low cost e.g. data, sample or knowledge sharing.
- **Research:** It is proposed that Flagship Projects develop new knowledge, validate approaches, methods or hypotheses; and have high scientific impact.
- **Resourcing:** Flagship Project leaders should be clearly identified and resourced to complete the project within the specified time-frame. Research Group Co-Chairs should not bear the responsibility of leading Flagship Projects, except presenting updates at the annual Council meeting, if required.
- GRA Flagship Projects must identify at least five Council Champions, Members and Partners, consisting of at least three GRA Member countries. A minimum of 30 percent of required funding must be confirmed for the Flagship Project lead and core project activities (cash or in-kind contributions of total project costs). Proposed funding mechanisms for additional activities and contributions identified (i.e. fellowship fund, workshop funding, or research call).

# APPENDIX 4: CLIFF-GRADS PROGRAMME

The Climate, Food and Farming, Global Research Alliance Development Scholarships Programme ([CLIFF-GRADS](#)) is a joint initiative of the Global Research Alliance on Agricultural Greenhouse Gases (GRA) and the CCAFS Low Emissions Development Flagship.

CLIFF-GRADS builds capability in early career scientists from developing countries to conduct applied research in agriculture greenhouse gas emission quantification and mitigation. During short research stays of up to 6 months, CLIFF-GRADS awardees are exposed to expertise and scientific training at their host institute that they would not otherwise receive during their PhD in their home country.

The rigorous application process ensures PhD students of a high calibre and the Programme fosters capability building in developing nations, generational knowledge transfer and bilateral collaboration.

Currently Round 5 of the CLIFF-GRADS programme is open for student applications. The call document can be found [HERE](#). Researchers may contact [cliffgrads@globalresearchalliance.org](mailto:cliffgrads@globalresearchalliance.org) for more information.

# APPENDIX 5: ACRONYMS

**AgMIP** – The Agricultural Model Intercomparison and Improvement Platform

**CIAT** - International Centre for Tropical Agriculture

**CLIFF-GRADS** – GRA PhD fellowship programme funded by New Zealand, USAID, the CGIAR Trust Fund and bilateral agreements in support of CCAFS; Climate, Food and Farming Research Network - Global Research Alliance Development Scholarship

**DBNRRC** – Dale Bumpers National Rice Research Centre

**EDF** – Environmental Defense Fund

**FLAR** - Latin American Fund for Irrigated Rice,

**FONTAGRO** – Regional Fund for Agricultural Technology of Latin America. (GRA Partner)

**GCF** – Green Climate Fund

**GHG** – Greenhouse gas

**GRA** – Global Research Alliance on Agricultural Greenhouse Gases

**MRV** – Measuring, Reporting and Verifying

**NERREC** – Northeast Rice Research and Extension Centre

**PRRG** – Paddy Rice Research Group, Co-Chaired by Japan, Senegal and Uruguay

**RUFORUM** – African Regional Universities Forum for Capacity Building in Agriculture. (GRA Partner)

**USDA ARS** – United States Department of Agriculture, Agricultural Research Service

**WRI** – World Resources Institute