

GLOBAL RESEARCH ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

GRA Council meeting, Mexico City

11 October 2016



Flagship projects for the GRA

- What is a ‘flagship project’?
- Overview of the nine proposed flagships
- Co-chairs thoughts on prioritisation for the Council to consider

What is a GRA flagship project?

- Addresses a critical research and/or capability building need of the GRA
- Provides unique GRA value-add, by making a major contribution to:
 - Reducing greenhouse gas emissions while supporting food security
 - Advancing global knowledge through collaboration
 - Supporting countries in their developing and implementing solutions
- Facilitates engagement by a broad range of GRA Members and Partners
- Has indicative resources identified (in-kind or cash)
- Clearly identifies milestones and deliverables

→ Note that flagship projects are designed to attract additional resources and to enhance the existing work programmes of the Research Groups

Nine flagship proposals

1. on-farm assessment of water management for rice
2. Improved greenhouse gas inventories – making them count
3. Healthy and resilient livestock systems
4. Enteric fermentation mitigation hub
5. Soil carbon sequestration
6. Nitrogen
7. Integrating mitigation and adaption actions for agriculture
8. Facilitating GHG mitigation research through a searchable, online meta-database
9. Identification of high yielding rice cultivars with low methane emissions

1. On-farm assessment of multi-beneficial water management techniques in the rice sector

FOCUS: Validating alternate wetting and drying irrigation in farmers' fields confirming no yield penalties.

ACTIVITIES / KEY COMPONENTS:

- Research around the globe confirmed that AWD sharply reduces CH₄ emissions, water consumption, production costs and arsenic in the grain
- Identifying proper AWD for each rice system
- Validation plots installed in commercial fields of innovative farmers in different countries
- Emissions, water consumption, costs, arsenic in grain and yields recorded
- Results documented and shared
- Farmer's fields used for extension to other farmers
- Regional networks expand the techniques to other countries and regions



1. On-farm assessment of multi-beneficial water management techniques in the rice sector

GRA VALUE-ADD:

- Going from research to massive adoption
- Strengthen connections among research and extension teams in different countries
- Capability building
- Promote synergies between mitigation and adaptation

KEY PARTNERS AND LINKAGES:

Americas: CIAT, FLAR, FONTAGRO, PROCISUR

Asia: IRRI, CCAC, MARCO



2. Improved GHG inventories: Making them count

FOCUS: Supporting countries to advance their GHG inventories for agriculture

ACTIVITIES / KEY COMPONENTS:

- Summary of current inventory practices and country experiences of adopting improved methodologies
- Develop guidance for improving inventories
- Targeted training and technical support for inventory improvement and for using inventory to support national climate change actions
- Dissemination & development of emissions data and factors to improve inventory development



2. Improved GHG inventories: Making them count

GRA VALUE-ADD:

- Research and development to directly support policy (INDC development, UNFCCC reporting)
- Improved quantification of mitigation actions
- Capability building

KEY PARTNERS AND LINKAGES:

FAO, World Bank, CG Centres, NZ Government, Development donors, climate finance (GEF, GCF).

Links to all research groups for emission data and modelling



3. Healthy and resilient livestock systems

FOCUS: Reduce emissions by Animal Health Care (mitigation); Improve Animal Health Care by using more resilient Livestock systems (adaptation)



ACTIVITIES / KEY COMPONENTS:

- Global Assessment of Disease Incidence
- Early Diagnostics
- Breeding, Feeding and Farming for Resilience
- Regional specific mixed intervention options from veterinary and zoo-technical perspective
- Capability development
- Animal Health by Resilience support Hubs

3. Healthy and resilient livestock systems



GRA VALUE-ADD:

- Substantial Mitigation Option.
- Connecting Adaptation to Mitigation
- Links Global One Health with Climate

KEY PARTNERS AND LINKAGES:

FAO, World Bank, IRC Animal Health;
CGIAR Centres; IFAD, IFAH

4. Enteric fermentation mitigation hub

FOCUS: Practices that increase the productivity and reduce enteric methane emissions intensity of ruminant livestock

ACTIVITIES / KEY COMPONENTS:

- Assess potential for productivity-based interventions to reduce emissions intensity
- Assess options, barriers and enabling factors
- Implement appropriate interventions in demonstration sites
- Supported by global knowledge hub:
 - Database on feed options and their effects on productivity, GHG, costs
 - Influence of rumen microbial communities on productivity under different feeds



Enteric fermentation mitigation hub

GRA VALUE-ADD:

- Links science to farm-level implementation
- Demonstrates success in supporting policy
- Umbrella coordination across regions
- Strong aspect of capability building
- Open global databases for wider benefits

KEY PARTNERS AND LINKAGES:

- CCAC, FAO, World Bank, CG Centres, NZ Government
- Strong link with flagship on inventories



5. Soil carbon sequestration

FOCUS: Agricultural practices that sequester carbon and restore soil quality



ACTIVITIES / KEY COMPONENTS:

- Potential and dynamics of carbon sequestration in crop and pasture systems and interactions with N
- Practices for soil C sequestration and carbon calculators
- Co-benefits for yields, water balance, and non-CO₂ greenhouse gases,
- Monitoring, verifying and reporting soil organic carbon stocks,
- Improving national GHG inventories by integrating soil organic carbon stock changes.

Technical tools (e.g. maps) through web-based knowledge hub delivering value and implementation support and targeting national action plans

5. Soil carbon sequestration



GRA VALUE-ADD

Positions GRA as a key player for soil carbon sequestration

KEY PARTNERS AND LINKAGES:

research program of the '4 per 1000' initiative
FAO, CCAFS, Land & Water CGIAR
European Commission, the World Bank, GEF.

Dedicated Coordination and Support Action (2.5 M€) to be submitted to the EC in Feb. 2017, involving the GRA, 4 per 1000 and FACCE JPI that will aim at better aligning international research on soil carbon sequestration.

6. Nitrogen

FOCUS: Optimising nitrogen's role in sustainable food production



ACTIVITIES / KEY COMPONENTS:

- Role of legumes in pasture systems
 - Quantifying biological nitrogen fixation
 - Novel mitigation technologies and practices
 - Maximising utilisation of nitrogen in feed
 - management of crop residues and animal waste to reduce nitrogen losses
 - Crop and grazing management to maximise N uptake by plants
 - Grazing management to manage direct N losses by animals
 - Others?
-
- Would need to define work of GRA by first taking into account developments in other processes.

6. Nitrogen



GRA VALUE-ADD:

- GRA is well positioned to generate science-based knowledge to help reduce nitrogen losses from agriculture and livestock systems.
- Significant expertise in Research Groups and Networks: pasture and crop management, fertilizer management, animal selection, animal feed and nutrition, and manure management.

KEY PARTNERS AND LINKAGES:

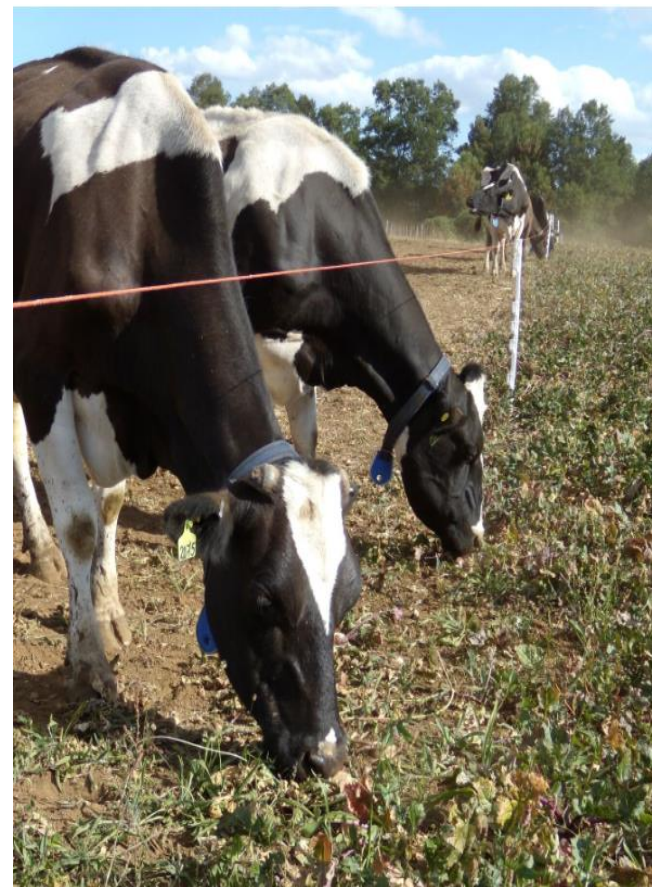
- CGIAR – 2030 goal to increase nutrient use efficiency by 20%
- International Nitrogen Initiative - identified the clear need for innovation and increased awareness
- The International Fertiliser Manufacturers Association (IFA) – right source, right rate, right time, right place
- SAI Platform
- Others?

7. Integrating mitigation & adaptation actions for agriculture

FOCUS: Supporting assessment of impacts and adaptation to climate change, and quantifying the mitigation benefit of targeted adaptation responses

ACTIVITIES / KEY COMPONENTS:

- Regional assessment of potential increases in emissions intensity under scenarios of climate change impacts on food production systems
- Regional assessment of mitigation (co)benefits of avoided impacts and successful adaptation practices for agriculture
- Guidance on methodologies for quantification, cost-benefit analysis and other metrics
- Sharing of experiences with developing policies and implementation of practices that unlock synergies between adaptation and mitigation
- Technology transfer and communication strategies and tools to demonstrate integrated mitigation and adaptation strategies and their benefits at global, national, and farm scales.



7. Integrating mitigation & adaptation actions for agriculture

GRA VALUE-ADD:

- Creation of/utilisation of regional networks (MLN, PRRG Asia, PRRG Americas, etc)
- GRA well placed to act as a hub across regions to support information and experience sharing and collaboration across diverse regions, including the use of climate and food system analogues and accelerated technology development and transfer.

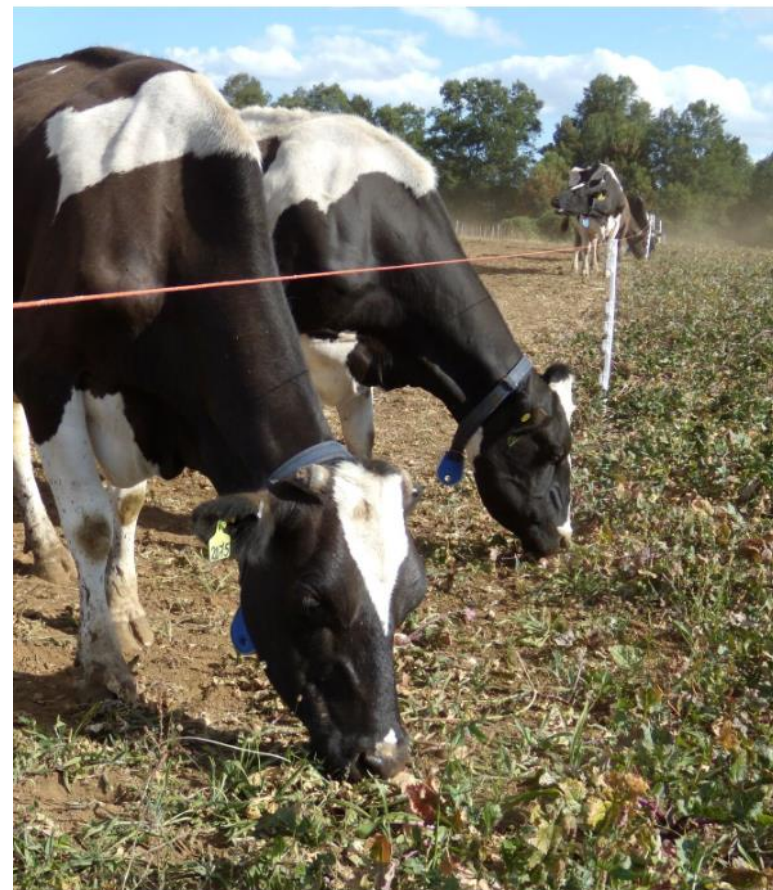
KEY PARTNERS AND LINKAGES:

CCAFS and number of CGIAR Centres

FAO

GACSA

AGMIP



8. Facilitating GHG mitigation research through a searchable online meta-database

FOCUS: Connecting the generation of data on mitigation of agricultural GHGs with users of that data

ACTIVITIES / KEY COMPONENTS:

- Create a searchable, online meta-database of experimental sites where GHG fluxes and soil carbon dynamics have been monitored, summarized, and published.
- Develop interface allow users to download metadata from experimental sites



8. Facilitating GHG mitigation research through a searchable online meta-database

GRA VALUE-ADD:

- Access to site metadata focused on relevant attributes will facilitate efficient identification of experimental sites for possible inclusion in GHG mitigation modeling efforts and meta-analyses, thereby saving time and resources.

KEY PARTNERS AND LINKAGES:

Previous funding provided from-U.S. Department of Agriculture National Institute of Food and Agriculture, Swiss National Science Foundation, Italian Ministry of Agricultural Food and Forestry Policies ; FACCE-JPI



9. Identification of high yielding rice cultivars with low methane emissions

FOCUS: Supporting the selection of high yielding rice cultivars with low methane emissions around the world

ACTIVITIES / KEY COMPONENTS:

- Understand the rice plant controlling factors affecting CH₄ emission by meta-analysis of published data and new experiments;
- Identify high yielding rice cultivars with low CH₄ emission;
- Outreach the knowledge further to policy-makers, breeders and local farmers through workshops and other communication tools.



9. Identification of high yielding rice cultivars with low methane emissions

GRA VALUE-ADD:

- improve knowledge sharing among member countries;
- access to and application by farmers of GHG mitigation technologies, which can also enhance agricultural productivity and resilience;
- promote synergies between climate change adaptation and GHG mitigation efforts.

KEY PARTNERS AND LINKAGES:

CGIAR Centers & Programs (IRRI, CIAT, CCAFS), Regional rice networks (FLAR)



Co-chairs thoughts on prioritisation of the nine proposed projects

In need of further development/discussion

- **6. Nitrogen** - more of a theme than a project at this stage but is a critical area for the GRA and should be developed further over the next 12 months.
- **7. Integrating mitigation and adaption actions for agriculture** – more of a theme than a project at this stage and too generic. Should be developed further to give it greater specificity.
- **8. Facilitating GHG mitigation research through a searchable, online meta-database** – a potentially valuable resource for researchers but there needs to be a broader conversation around the role of the GRA in maintaining/supporting/populating databases before adopting as a flagship. Is the GRA better placed to play a supporting role and supply data etc. to databases maintained by other organisations who have better access to the long-term resources needed?

Co-chairs thoughts on prioritisation of the nine proposed projects

Pragmatic prioritisation by resource availability

Project name	Currently resourced	Indicative commitment to additional resources	Potential to attract additional resources
1. on-farm assessment of water management for rice	Green	Red	Green
2. Improved greenhouse gas inventories	Green	Green	Green
3. Healthy and resilient livestock systems	Red	Red	Green
4. Enteric fermentation hub	Green	Green	Green
5. Soil carbon sequestration	Green	Green	Green
9. Identification of high yielding rice cultivars with low CH ₄ emissions	Green	Red	Red

N.B. Indicative commitment to additional resources does not mean that these projects have sufficient resources to meet their stated aims and objectives

Co-chairs thoughts on prioritisation of the nine proposed projects

- Getting flagship projects underway as soon as possible is important – projects can start in a limited way and grow over time
- Having funded flagships is highly desirable but adopting flagships without a funding commitment is highly undesirable
- Development of flagship projects is a continuous process
- Flagships 1- On farm assessment of water management in Rice, 2 - Improved GHG Inventories ,4 - Enteric Fermentation Hub and 5 - Soil Carbon Sequestration are the most contract ready at this stage.



Questions?