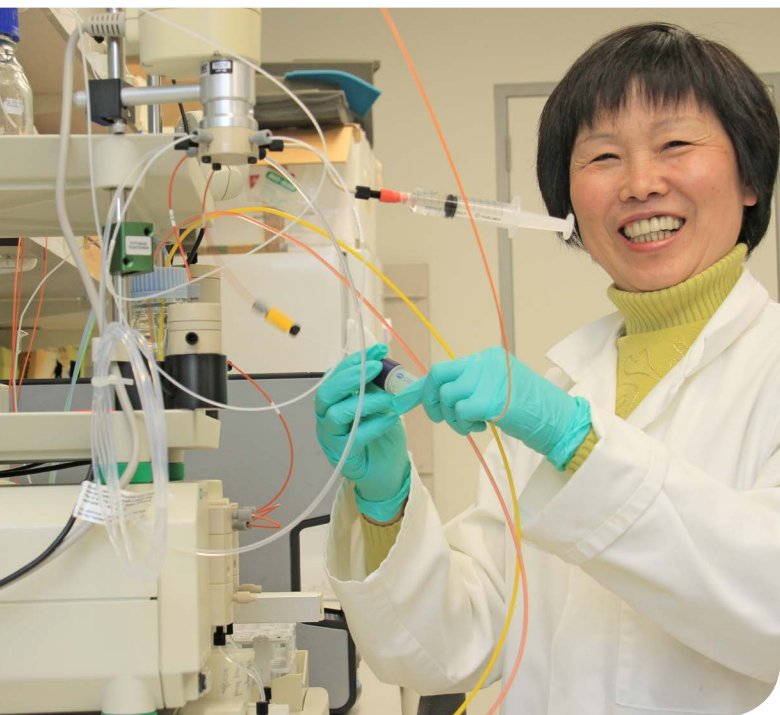


# GLOBAL RESEARCH ALLIANCE

## ON AGRICULTURAL GREENHOUSE GASES



### Working together to help farmers grow the world's food without growing greenhouse gas emissions

The Global Research Alliance (GRA) provides a framework for cooperation and investment in research activities that support the agricultural sector in meeting the growing demand for food while reducing greenhouse gas emissions intensity. Our work is focused on improving efficiency, productivity, resilience, and adaptive capacity across the agricultural sector.

Established in 2009, the GRA has over

40 member countries. We partner with farmer organisations like the World Farmers' Organisation and international organisations that we share common goals with such as the Food and Agriculture Organisation and the World Bank. In addition to our members and partners, the GRA collaborates with other non-government and government organisations and scientists from around the world.

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## What we do

The GRA supports the agriculture sector by developing and implementing practical on-farm solutions for reducing greenhouse gas intensity while increasing food supply. Our focus is on improving the efficiency and resilience of agriculture systems, identifying and capitalising on the synergies between adaptation and mitigation and promoting best practice. Our research work is used by members to support national policy development and decision-making in accordance with their specific circumstances, objectives and priorities.

The GRA organises its work through three research groups:

- **Croplands**
- **Livestock; and**
- **Paddy Rice.**

We also have two cross-cutting groups that work on issues that are common across the three research groups. These two cross-cutting groups are:

- **Soil Carbon and Nitrogen Cycling; and**
- **Inventories and Monitoring.**

GRA activities include:

- publishing best practice guidelines for measuring greenhouse gas emissions in agricultural systems;
- synthesising research results;
- developing mitigation and adaptation solutions;
- collaborating on multi-country and multi-partner research projects;
- supporting literature and research databases; and
- undertaking capacity and capability building work, particularly in developing countries.





## Building capabilities

Many countries already have research underway to better understand, measure and manage agricultural greenhouse gas emissions and soil carbon sequestration. The GRA seeks to support existing research efforts, extension activities and policy-making to make faster progress. By bringing this knowledge together, the GRA can help the agriculture sector find the most efficient and effective ways to reduce emissions intensity while meeting food security objectives.

An important element of this support is capacity-building projects through workshops, training, fellowships, and collaborative projects. These projects include:

- **Collaboration with FONTAGRO**, a Latin American and Caribbean fund supporting agricultural research and innovation, on a livestock project involving 12 countries. The project centres on building capacity for measuring greenhouse gas emissions in traditional and improved livestock systems. The project facilitates the design of mitigation strategies and policies to promote sustainable livestock systems in Central America and the Andes.

- **Collaborative work with the Climate and Clean Air Coalition** on a manure management programme to reduce greenhouse gas emissions from animal manure. We have also joined forces to develop initiatives to reduce greenhouse gas emissions from paddy rice cultivation at the national level.
- **Collaboration with CGIAR**, the Consultative Group on International Agricultural Research, on several research projects. This includes working with the International Rice Research Institute; the International Center for Tropical Agriculture; the International Livestock Research Institute; and the CGIAR research programme on Climate Change, Agriculture and Food Security on looking at ways to reduce greenhouse gas emissions from regional agriculture systems.
- **Science fellowships and awards** funded by member countries in support of the GRA, such as New Zealand's LEARN and GRASS awards, the USA's GRA Borlaug fellowships, and fellowships under Brazil's LABEX scheme.





## Our research work

Each of the GRA research groups is committed to sharing knowledge and building capacity among scientists and other practitioners. Below is a brief summary of the work of each group.

### Paddy Rice Research Group

Paddy rice production causes significant methane emissions in comparison to other cropping systems. The Paddy Rice Research Group identifies best management practices and gaps in current knowledge, standardising measurement techniques, and developing improved country-specific emission factors and mitigation options.

Following a research stocktake and a survey of current practices, the Paddy Rice Research Group is currently designing multi-country experiments to test various mitigation options, such as water management in Asian paddy fields. Results will provide improved recommendations for farmers in these and other countries.

### Livestock Research Group

The Livestock Research Group promotes ways to reduce the greenhouse gas intensity of livestock production systems through a range of interventions, including feed quality, genetics and breeding, function of the rumen, improving animal health and manure management. The group is also carrying out work on how to improve soil carbon stocks in grassland systems.

The Livestock Research Group has established a number of research networks, including the Animal Selection, Genetics and Genomics Network (ASGGN) which provides an open communication link where scientists from around the world can share information and data. The network is a forum to debate and reach agreement on a variety of topics, including common protocols for measuring methane emissions and how DNA and samples of all animals measured are collected and stored.





## Croplands Research Group

The Croplands Research Group concentrates on reducing the intensity of greenhouse gas emissions and improving the overall production efficiency of cropland systems. The group is synthesising research that identifies ways to limit the losses to the atmosphere of soil carbon and nitrogen, and to transfer that knowledge and associated technologies to farmers, land managers and policy-makers around the world.

One of the group's projects is a database known as MAGGnet (Managing Agricultural Greenhouse Gas Network). MAGGnet

will inform how agricultural management practices influence greenhouse gas emissions and soil carbon sequestration from a number of experiments around the world. The database will also provide a repository of experimental data to test existing and newly developed ecosystem process models. Over 200 studies have already been assembled in the MAGGnet. The outcome of this project will be an improved ability to compare mitigation strategies with adaptation practices from around the world.







## Making the connection between agricultural systems

Our two cross-cutting groups work on issues that are common across the three research groups to link the collective knowledge and to find solutions appropriate for diverse agricultural production systems.

### Soil Carbon and Nitrogen Cycling

This group evaluates soil carbon and nitrogen models across the three research areas.

Agricultural productivity, greenhouse gas emissions and soil carbon sequestration are compared across different models and benchmarked with high-quality data from measurement sites. Joint protocols are developed to test mitigation and adaptation activities across a range of management practices, soils and climates. Armed with this information, farmers and researchers can work together to develop more effective mitigation and adaptation strategies.

### Inventories and Monitoring

This group promotes and supports consistent methodologies for monitoring and estimating greenhouse gas emissions.

Complementing the work of the three research groups, the group is determining best practice guidance for estimating soil organic carbon. The group is also developing standardised methods to quantify greenhouse gas emissions across farming systems and climates.



## Learn more

The GRA brings together scientists and agricultural experts to increase cooperation and investment in research activities aimed at reducing the emissions intensity of agricultural production systems. Our work centres on improving the efficiency, productivity, resilience and adaptive capacity of agricultural systems around the world.

Visit [www.globalresearchalliance.org](http://www.globalresearchalliance.org) to learn more and to find out how to participate.

The Global Research Alliance – finding agricultural solutions to climate change through international expertise and know-how

