

Overview of Americas Sub-Group of Paddy Rice Research Group (PRRG)

Gonzalo Zorrilla – INIA Uruguay Co-Chair PRRG-GRA

Asia Sub-Group Meeting - Nanjing, September 18, 2015

Rice is everywhere in the Americas

GLOBAL RESEARCH ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES



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Paddy Rice Members

27 countries are members of the paddy rice group





Members in the Americas

- USA
- México
- Nicaragua
- Colombia
- Ecuador
- Perú

- Bolivia
- Chile
- Paraguay
- Brasil
- Argentina
- Uruguay

Not members with important irrigated rice areas:

- Venezuela, Guyana, Cuba, Dominican Republic
- Europe? Spain, Italy



Partners

- CIAT International Center for Tropical Agriculture
- PROCISUR Southern Cone NARS Consortium
- CCAFS CGIAR Climate Change, Agriculture and Food Security Program
- CCAC Climate and Clean Air Coalition
 on Short-lived Pollutants

1st. America Sub-Group Meeting



ON AGRICULTURAL GREENHOUSE GASES

May 2014, CIAT, Colombia



• Attended by 9 Alliance member countries and 3 partner institutions.

2nd. America Sub-Group Meeting



ON AGRICULTURAL GREENHOUSE GASES

February 2015, Pelotas, RS - Brazil



- Alongside the XII Latin American and The Caribbean International Rice Conference 2015
- Attended by 6 Alliance member countries and 3 partner institutions.



GHG Emissions Research in South America

Extensive rice cultivation

Direct seeding and initial applications in dry

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Mechanized systems

An example of Improved Intensive Rotation









AWD is being tested in several countries



Significant reductions in CH4 emissions and no yield penalty



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AWD Uruguay S. Tarlera, P. Irizarri , A. Roel – UDELAR, INIA



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10 % yield penalty

AWD Colombia





The CCAC Paddy Rice Component: Reducing Methane Emissions from Flooded Rice Fields

Ngonidzashe Chirinda

Colombia, Vietnam and Bangladesh

AWD Colombia



Proposed focus technology: Alternate Wetting and Drying (AWD)

Periodic drying and re-flooding of rice fields



- Safe AWD = Irrigate when water depth ~ -15 cm
- Reduces methane emission ~40-50%
- Saves irrigation water ~15-35%

Include other mitigation options, e.g. altered straw management





Other approaches for reducing GHG emissions from paddies





Potential decrease of greenhouse gas emissions from paddy soils in Southern Brazil by conversion of rice monocropping to crop rotation with soybean and maize



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A seven-year study on the effects of fall soil tillage on yield-scaled greenhouse gas emission from flood irrigated rice in a humid subtropical climate

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2nd meeting of the America Sub-Group of Paddy Rice Research Group



Yield-scaled greenhouse gas emissions from flood irrigated rice under long-term no-tillage and conventional tillage in Southern Brazil





Some Findings

- Rotations with other crops reduce emissions and increase land productivity
- Anticipated tillage (not in winter) reduces emissions and ensure good seed bed
- No-till systems reduce emissions compared with conventional tillage, and they have several other advantages to farmers

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New Project in Uruguay

GHG emissions and microbial dynamics in soils in search for sustainable intensification of rice cropping systems VY DELAB



Project Goals

- Comparison of three contrasting rice systems regarding intensity of annual CH4 and N20 emissions and productivity (low-medium-high rice intensity)
- Evaluation of soil microbial groups involved in C and N recycling relevant to methane and nitrous oxide emissions
- Correlation between biological and physicochemical parameters with regard of GHG emissions in the three different systems

Paddy Rice Research Group

Co-chairs

Kazuyuki Yagi, NIAES, Japan Gonzalo Zorrilla, INIA, Uruguay

• Action plan:

- 1. Standardize measurement technique
- 2. Database of experimental sites
- 3. Increase country participation
- 4. Pilot multi-country experiment
- 5. Network for mitigation and adaptation synergies





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Standardization



Guidelines for Measuring CH₄ and N₂O Emissions from Rice Paddies by a Manually Operated Closed Chamber Method



Version 1 August, 2015 National Institute for Agro-Environmental Sciences, Japan America Sub-Group will start reviewing the guidelines and proposing additions or complementary information if needed



Database



- A new proposal to develop a database (DB) of experimental sites was endorsed.
- **Spreadsheets** for data input were circulated to member countries in early 2015.
- We are working on it, but there are few published papers up to now in Latin America (US?)

Increase Countries participation



- USA and European rice countries
- Commitment from countries that are members and participate on PRRG but do not have funds and resources to do research

Multi-country Project



Main Targets:

- Gas emission comparison among regions, climates and production systems taking into account the whole rice system.
- Modeling gas emissions in different systems.
- Better understanding of the soil microbiology related with GHG emissions from rice paddies.

Scarce funding for multi-country projects in this region

Mitigation & Adaptation Synergies



- Vietnam, with the support of Indonesia and other experts coordinate the development of this framework.
- We expect to engage with Vietnam to give our inputs on this issue

Summary of America Sub – Group Performance



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- Created less than two years ago
- Substantially increased country participation in the region
- Community of practice formed by scientists (Brazil, Argentina, Chile, Colombia and Uruguay) sharing knowledge and techniques
- Some countries do not have conditions to do research (Paraguay, Bolivia, Perú, Ecuador)
- Multi-country project proposal