The past, present and future of climate change mitigation research for irrigated rice systems in Latin America and the Caribbean (LAC)

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Acknowledgments

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CGIAR

RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security

CCAFS

CLIMATE & CLEAN AIR COALITION TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

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MinAgricultura Ministerio de Agricultura y Desarrollo Rural

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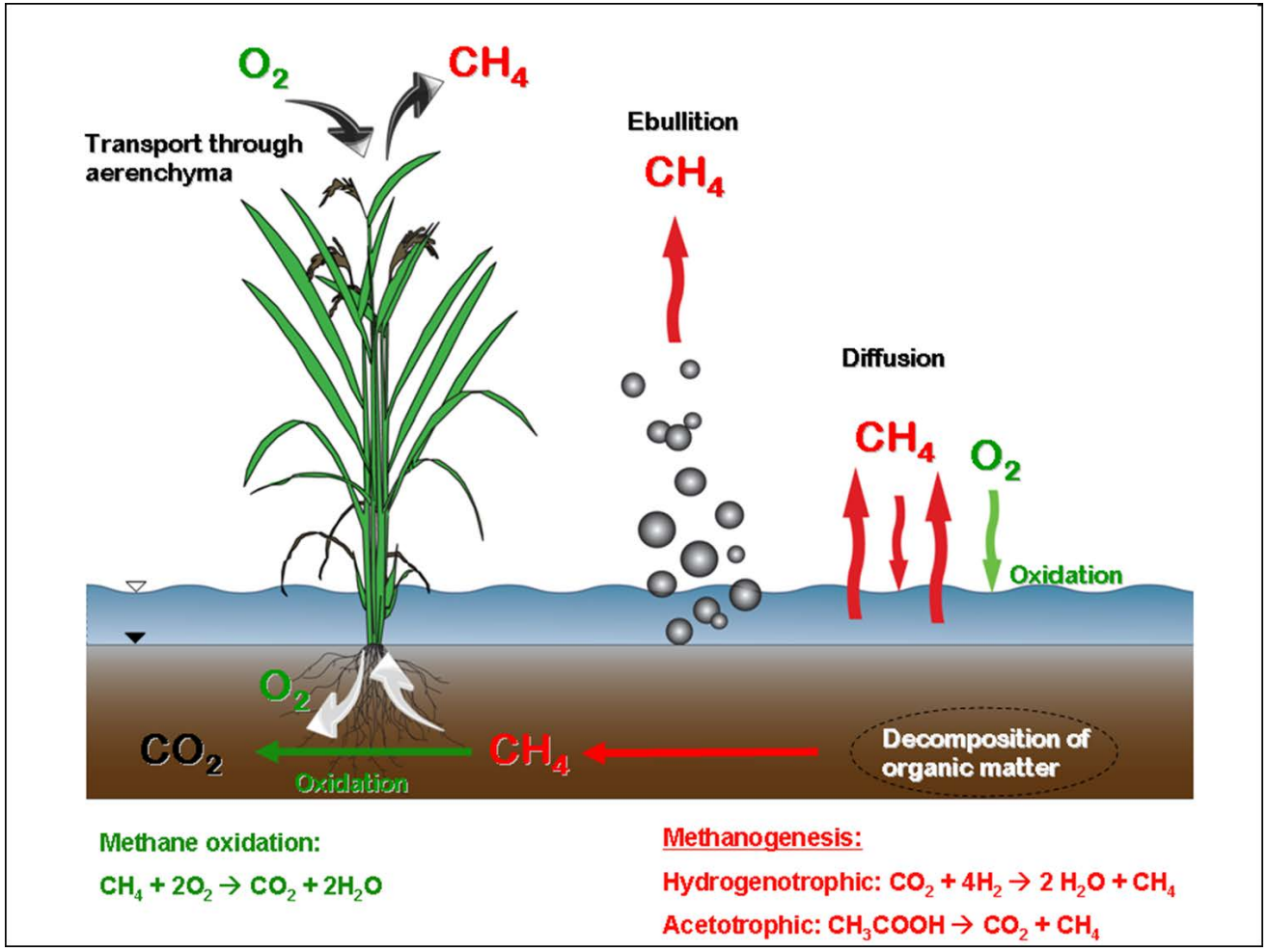
Agenda

- **Objective of agriculture** links with climate change (CC) mitigation
- Finding from **past** CC mitigation research conducted in LAC
- **Current efforts** to advance CC mitigation research
- **Envisaged future** of CC mitigation research
- Take home **message**

Basic objective of agriculture

- **Food** on the **table** and **money** in the pockets of **current** and **future** famers and non-farmers
- Farmer **management** and **technological** choices are important drivers and determinants of how this basic objective can be sustainably achieved
- Generally, increases in **efficiency** = decrease in GHG **emissions**
- Producing the needed food with reduced carbon footprint is therefore a goals worth pursuing

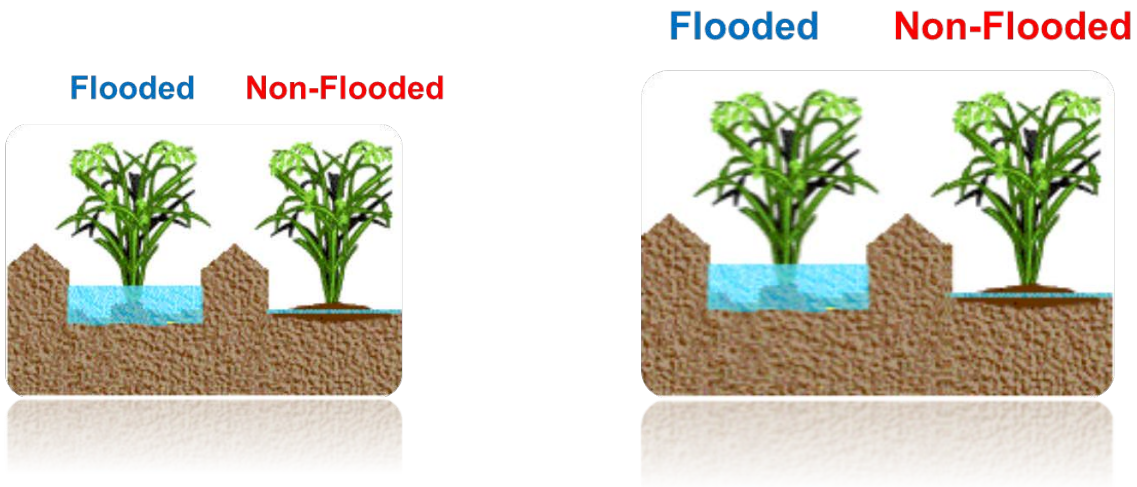
Tillage



- Tillage effects on GHG emissions mainly studied in Brazil
- **Study 1**: **39%** reduction in CH_4 with no-till compared to conventional tillage (Metay et al., 2007)
- **Study 2**: Reductions of **21%** with no-till (Bayer et al., 2014) – similar N_2O emissions observed
- **Study 3**: **25%** reductions with fall tillage (Bayer et al., 2015)

Water management

The practice of AWD is defined by the periodic drying and re-flooding of the rice field.



- Studies conducted in Brazil: **25-45%** reduction with AWD (Moterle et al., 2013; Zschornack et al., 2016)
- Study in Uruguay: **55%** reduction with AWD (Tarlera et al., 2016)
- Study in Colombia: **70%** reduction with AWD (Chirinda et al., 2017)
- Yields?

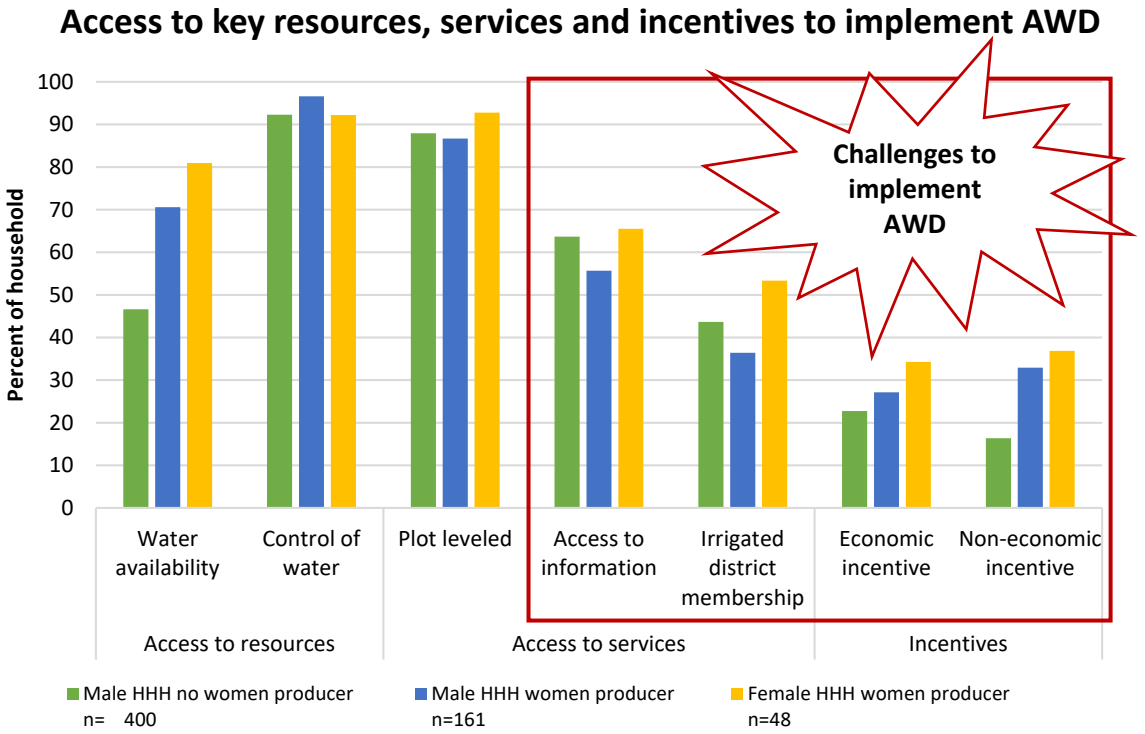
Socioeconomic aspects can enable or hinder AWD adoption in Colombia

Challenges:

- **No economic incentives** to save water: payment by area not by volume used
- Limited access to **information**, **irrigated district membership**, neither **non-economic incentives**

Advantages:

- There is **control of water**
- Farmers affirm they **leveled their plots**
- Households with **women** producers tend to have **more non-economic incentives** (GHG mitigation)



García et al, 2016

Future

- GRA, FONTAGRO, CCAC and other initiatives contribute towards **accelerating efforts** aimed at **filling existing knowledge gaps** in the LAC.

- Exploring **mitigation potential** of different **management practices** and **technological options**

- Support countries develop and implement strategies to **reduce GHG emissions** and **increase competitiveness** of their rice sectors

Research, fund raising and policy support

- Flagship project for **on-farm evaluations** – GRA
- FONTAGRO concept note evaluating and modelling **different AWD versions** in Peru, Colombia and Chile
- CCAC kick-started **Rice NAMA** discussions in Colombia
- Supporting countries **generate evidence** on the contribution of rice to **their NDCs**

Take home messages

- **Potential** to **reduce GHG** emissions from rice systems **in LAC exists**.
- **Mitigation potential** of other management and technological options **yet to be quantified**
- Tillage and AWD research conducted in a few countries – **urgent need to support other countries**
- Providing evidence to **support NAMA development and implementation** and **reporting** to the UNFCCC
- Options that allow countries to meet **SDG targets** and achieve **their NDCs**, need to be prioritized