

OPPORTUNITIES

# Sustainability Challenges for Rice

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# RiceTec is the only seed company focused on rice

- RiceTec founded in US - 1988
- Mercosur expansion - 1996
- India expansion - 2010

RiceTec has led the way in transforming the rice seed industry for more than 30 years.

- First hybrid cross created - 1988
- First hybrid released - 2000
- First herbicide tolerant trait released - 2003

RiceTec has partnered with rice growers for generations.

## OUR VISION

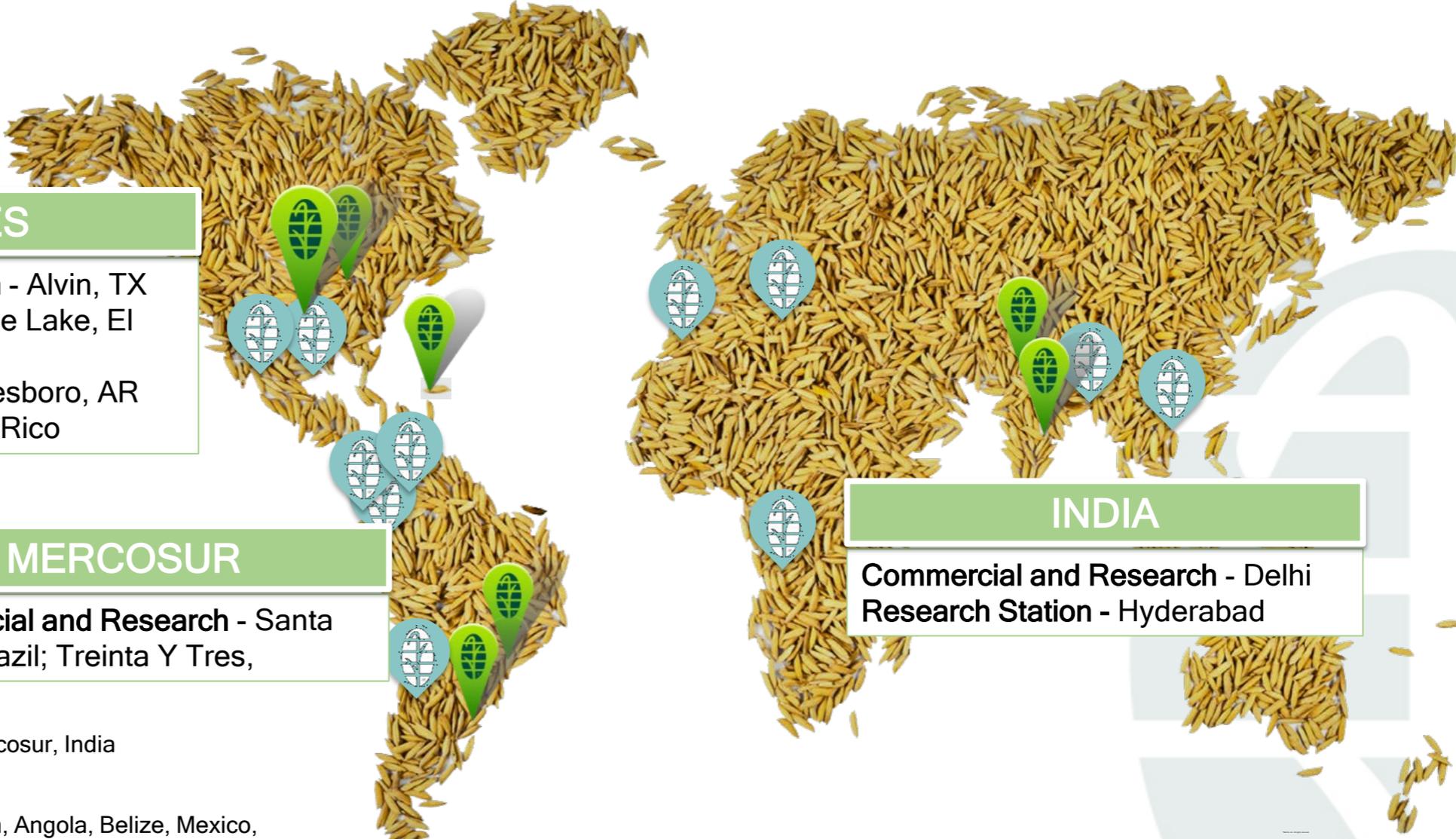
Sustainable rice agriculture that creates more value for farmers, consumers, and the planet

## OUR MISSION

To lead innovation for sustainable rice agriculture



# With operations around the world, RiceTec services a global customer base



## UNITED STATES

**Global Headquarters & Research** - Alvin, TX  
**Production** - Alvin, Danbury, Eagle Lake, El Campo, TX  
**US Commercial, Research** - Jonesboro, AR  
**Research Station** - Lajas, Puerto Rico

## MERCOSUR

**Commercial and Research** - Santa Maria, Brazil; Treinta Y Tres, Uruguay

## INDIA

**Commercial and Research** - Delhi  
**Research Station** - Hyderabad

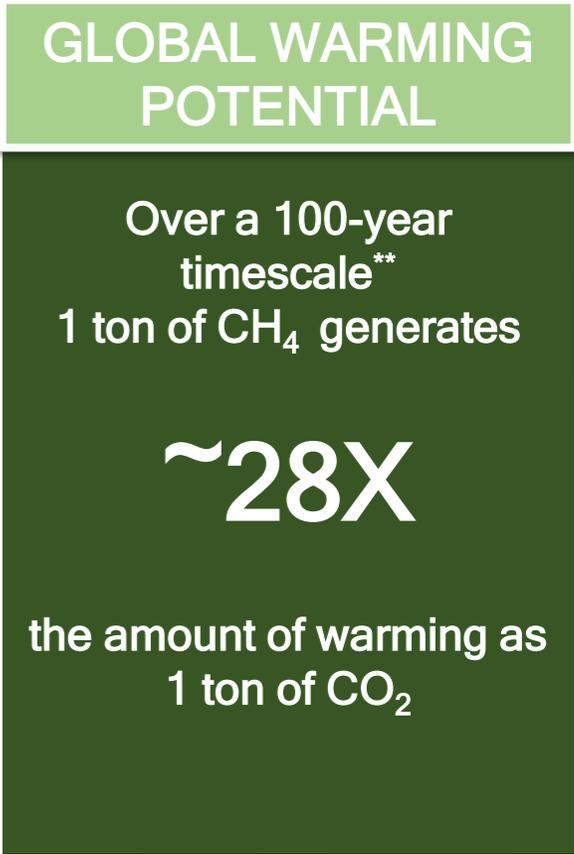
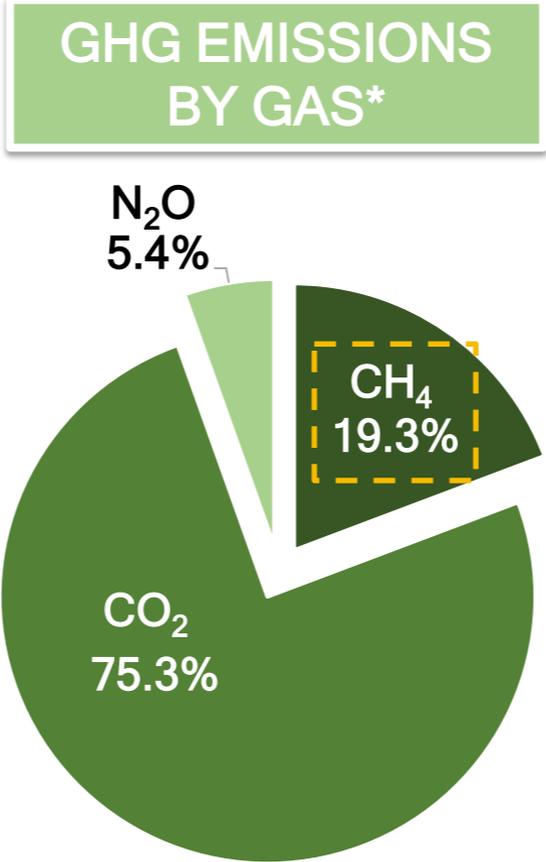
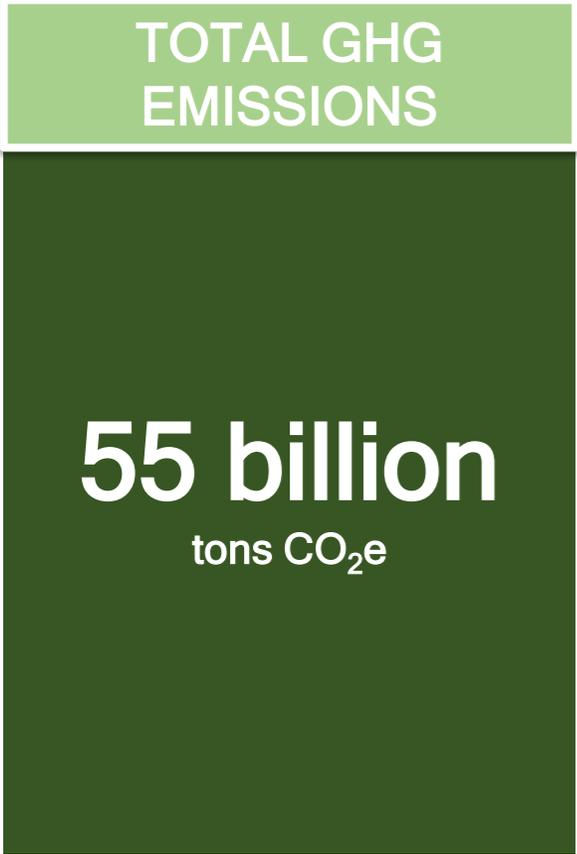


RiceTec Operations: United States, Mercosur, India



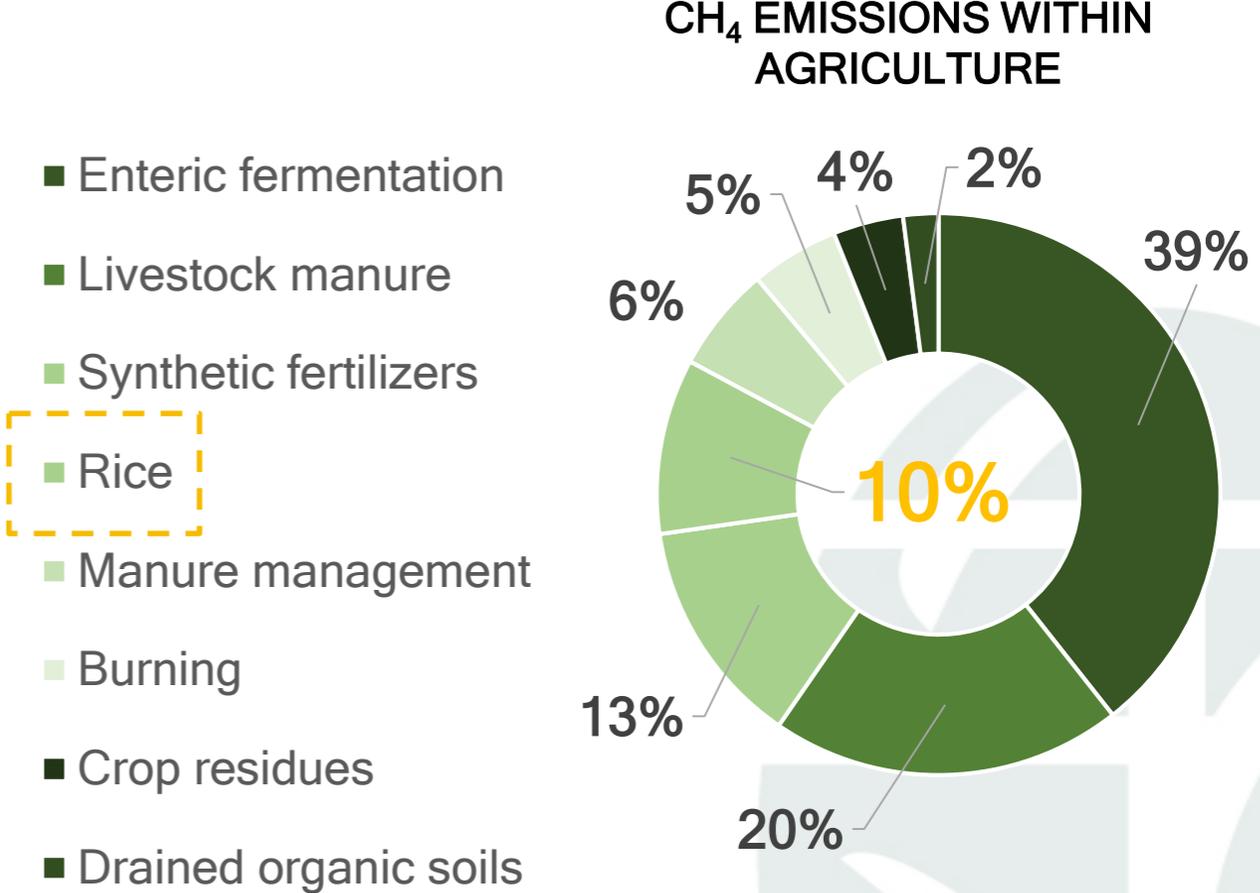
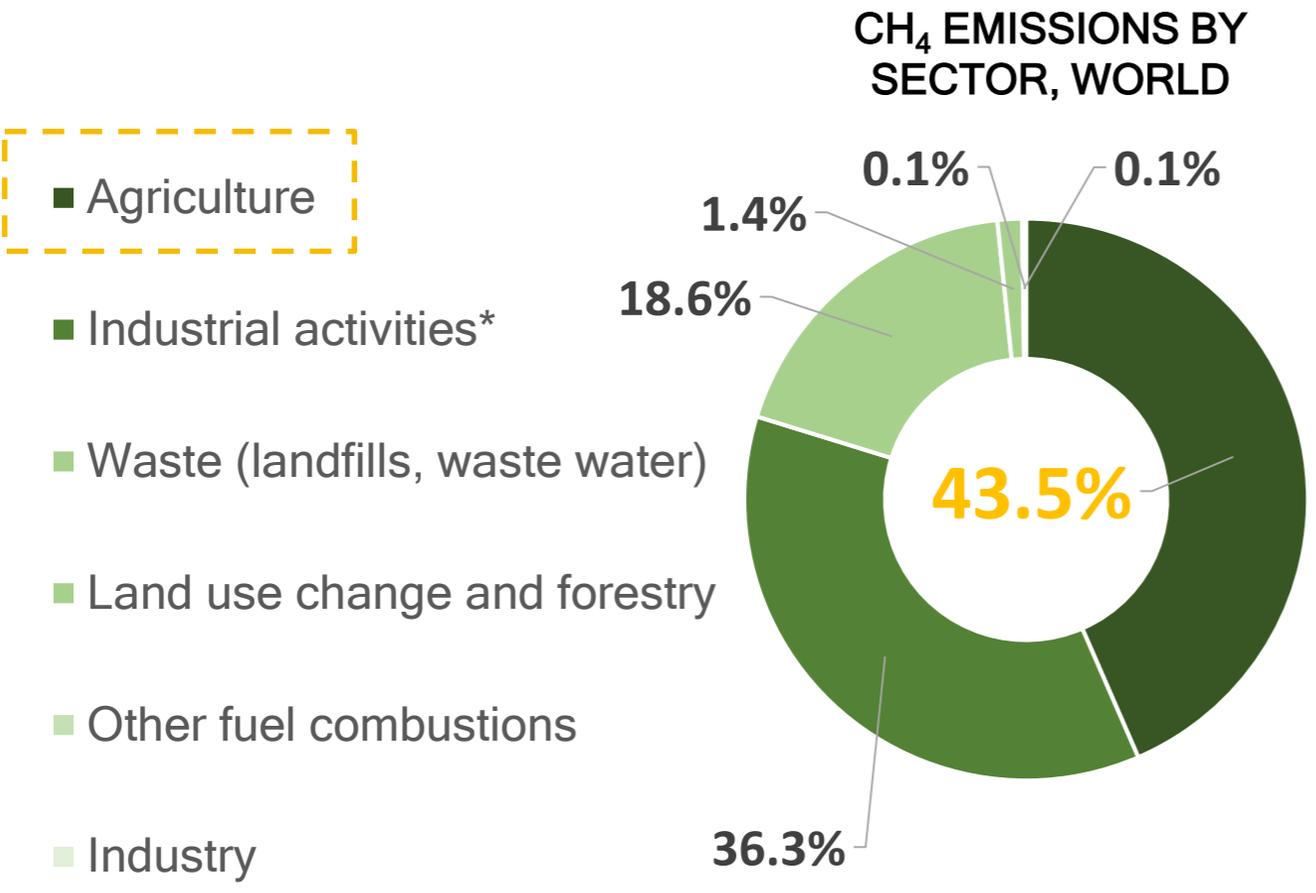
Export Countries: Spain, Italy, Colombia, Angola, Belize, Mexico, Ecuador, Peru, Paraguay, Bangladesh, Vietnam

# Methane is a much stronger GHG gas than CO<sub>2</sub> due to its warming potential and thus has a higher impact



\*Measured in tons of CO<sub>2</sub>e  
\*\*20 years ~80 times more heat than CO<sub>2</sub>

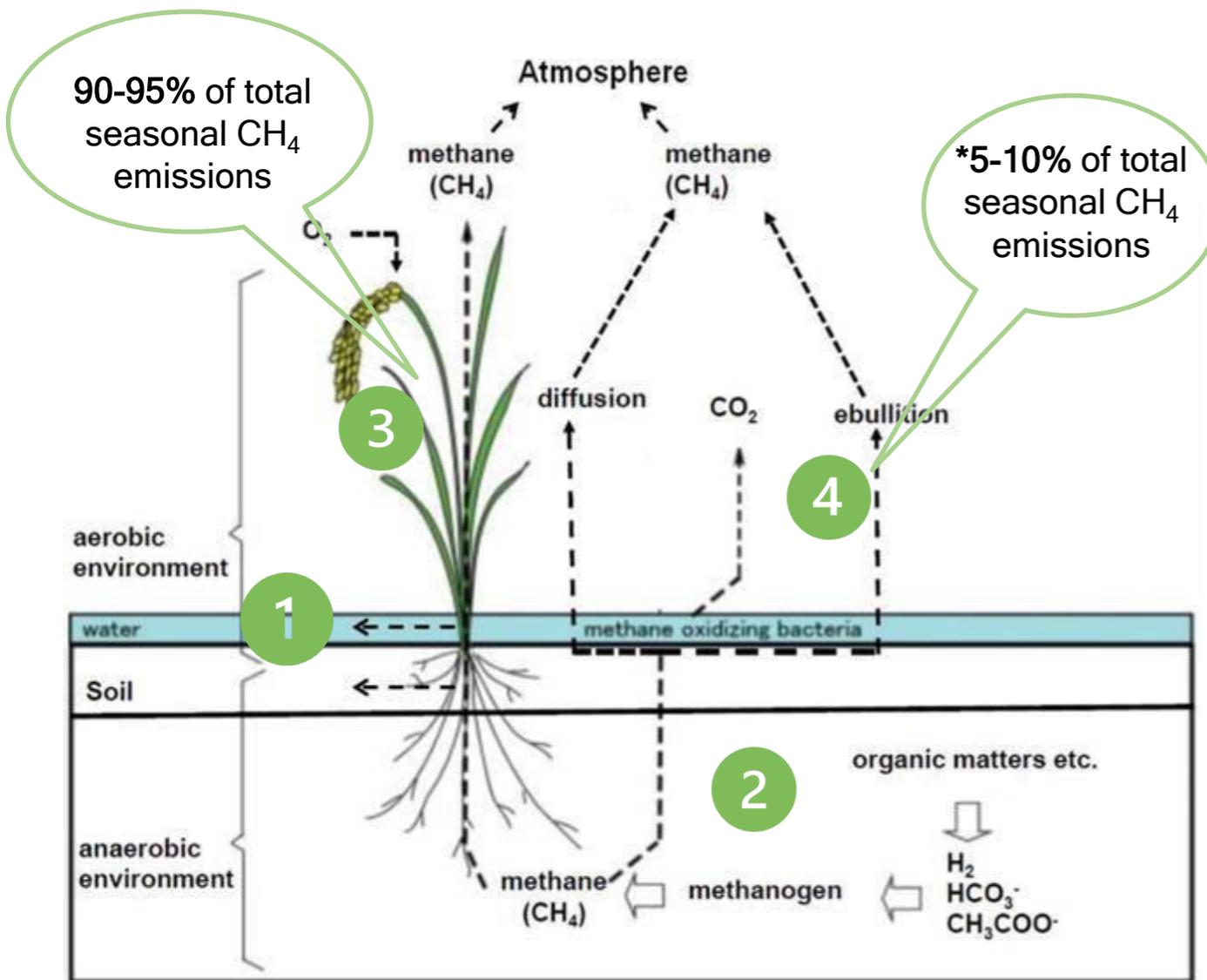
# Rice agriculture makes a significant contribution to total methane emission worldwide



**Rice is responsible for 10% of the CH<sub>4</sub> emissions in agriculture or ~4% of the global CH<sub>4</sub> emissions**

\*Includes unintentional gas leaks from fracking and more traditional oil and gas extraction and transportation

# Water management practices significantly influence and drive methane production



- 1 Oxygen can't reach the soil when water is on the field
- 2 Lack of oxygen causes anaerobic fermentation, producing methane
- 3 Methane exits the soil and enters the atmosphere
- 4 Remaining methane rises soil or moves through the soil and the water above it

# Water usage in rice can be reduced with direct seeded rice (DSR)

US: DSR

Europe: DSR

South America: DSR

Africa: Transplanted

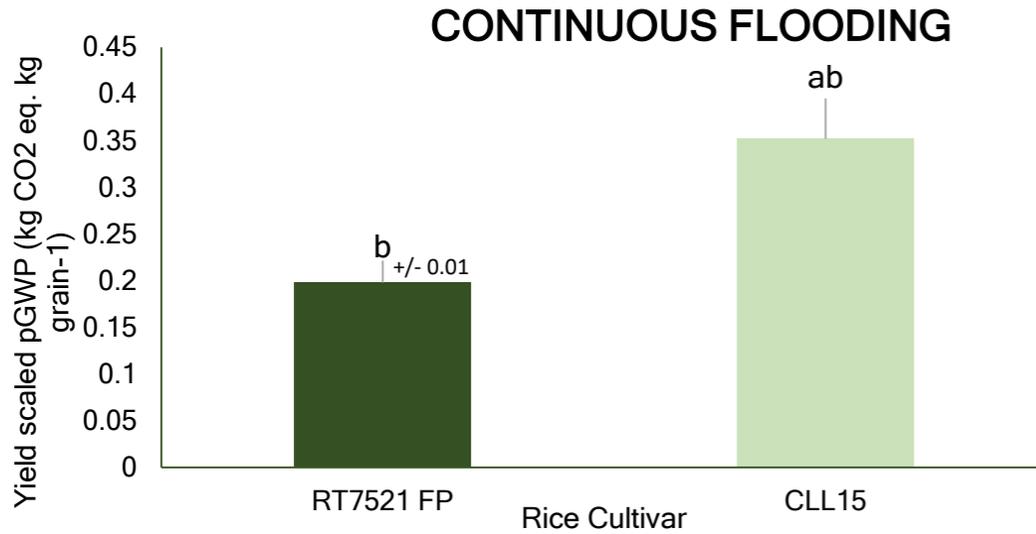
SEA: Transplanted



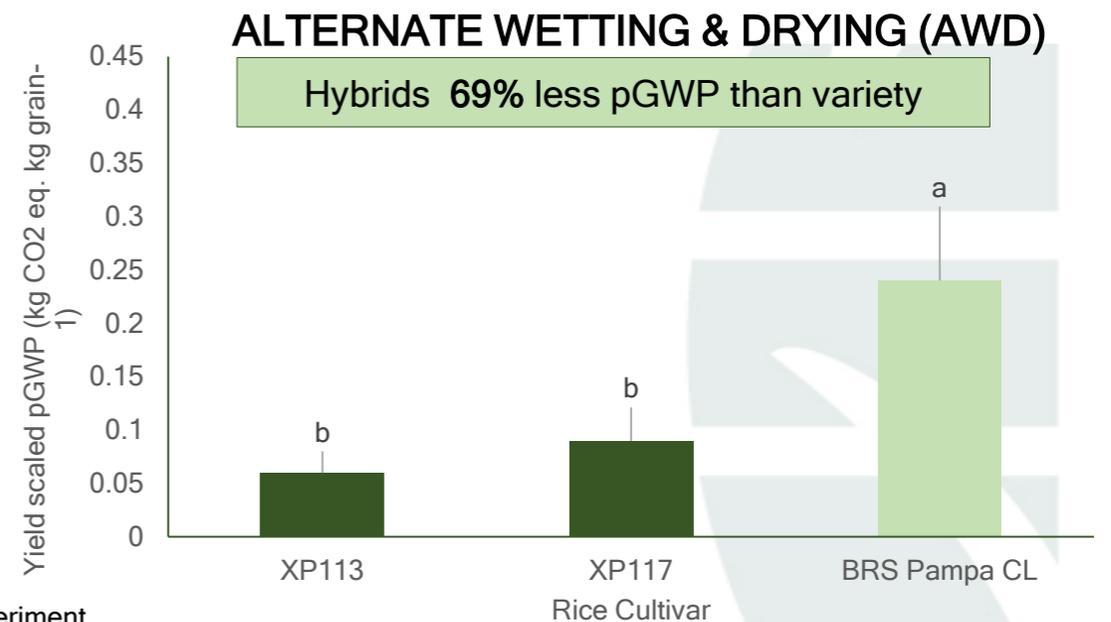
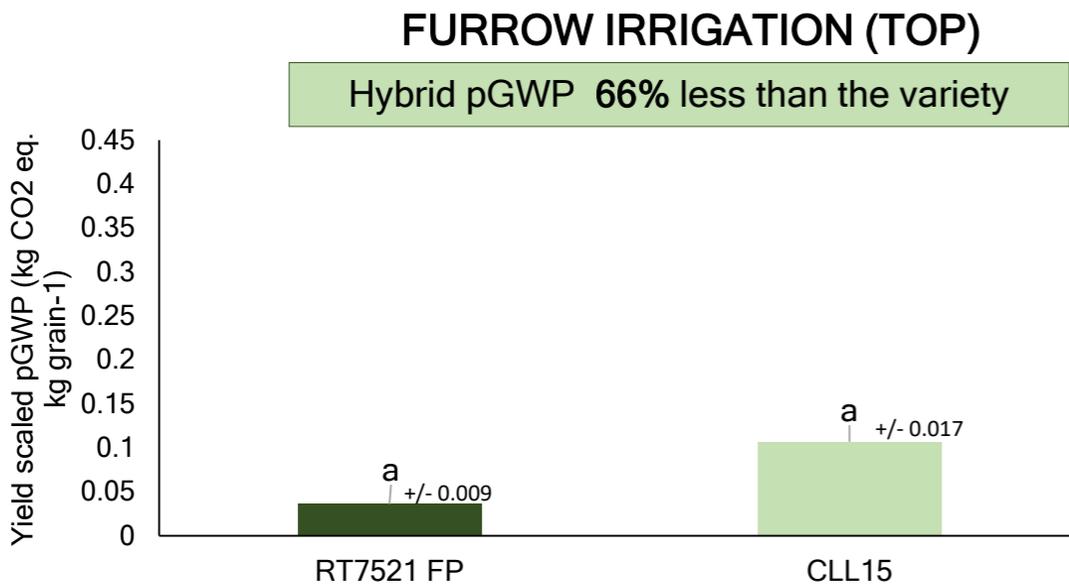
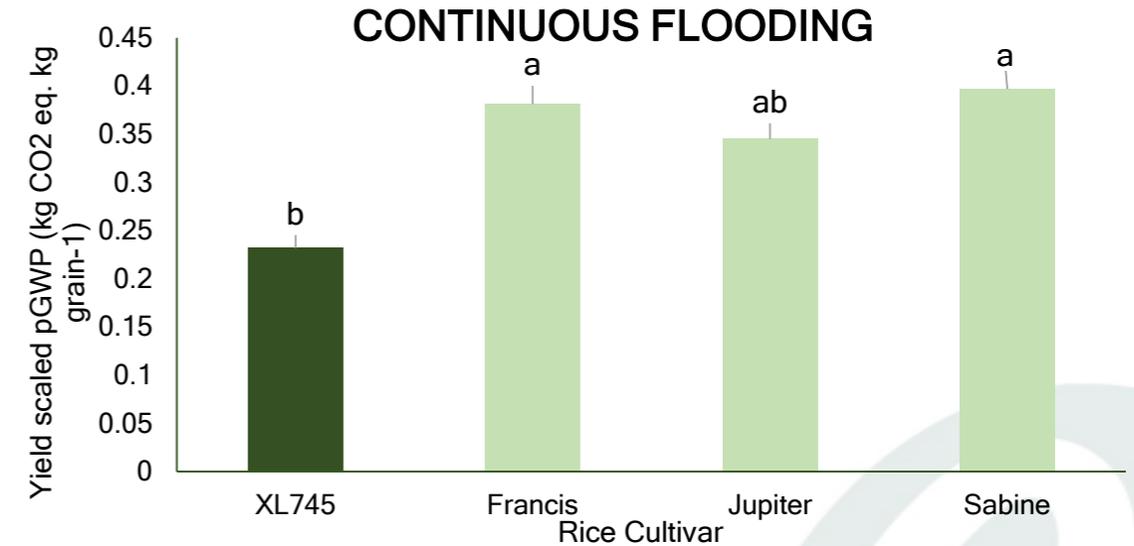
DSR - rice seeds are directly sown into the field without first raising seedlings in a nursery

**Transplanted Rice:** rice seedlings are grown in a nursery and then transplanted by hand or using machines into a flooded field

# Change in water management practices and use of hybrids can help avoid methane production

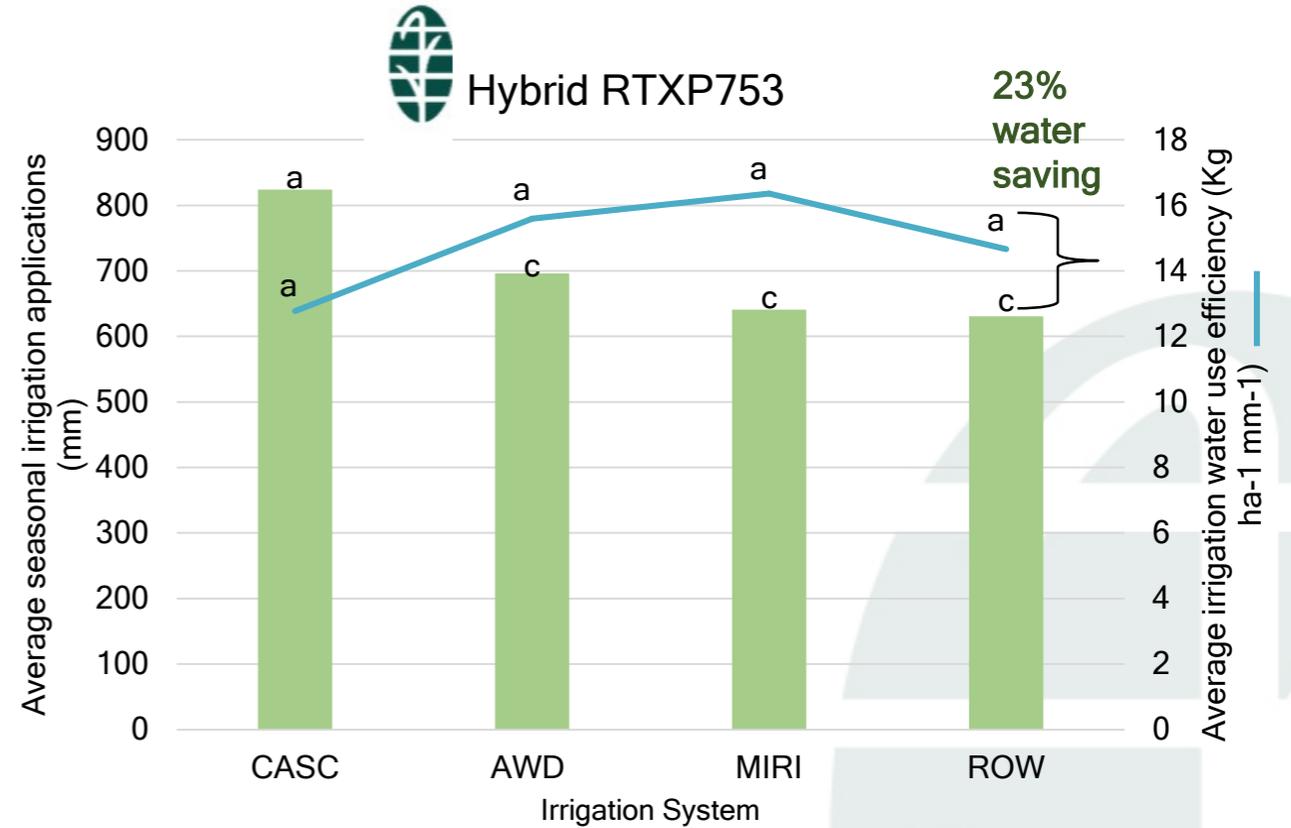
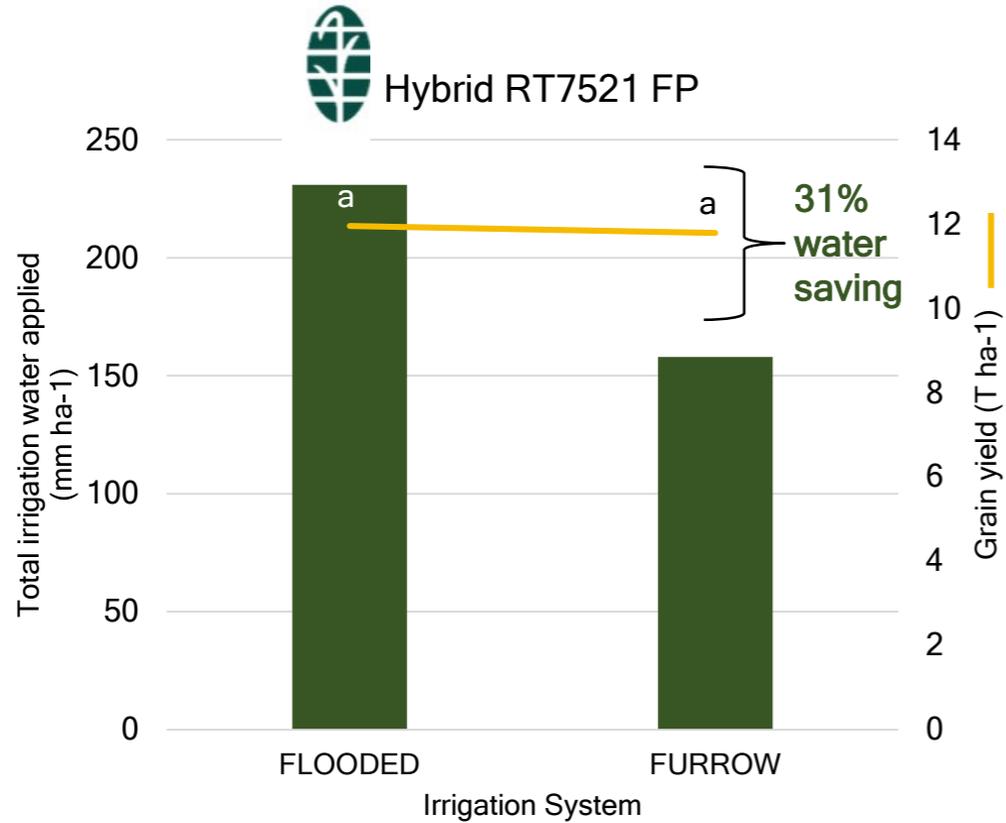


The pGWP of hybrids is 44% less than that of varieties



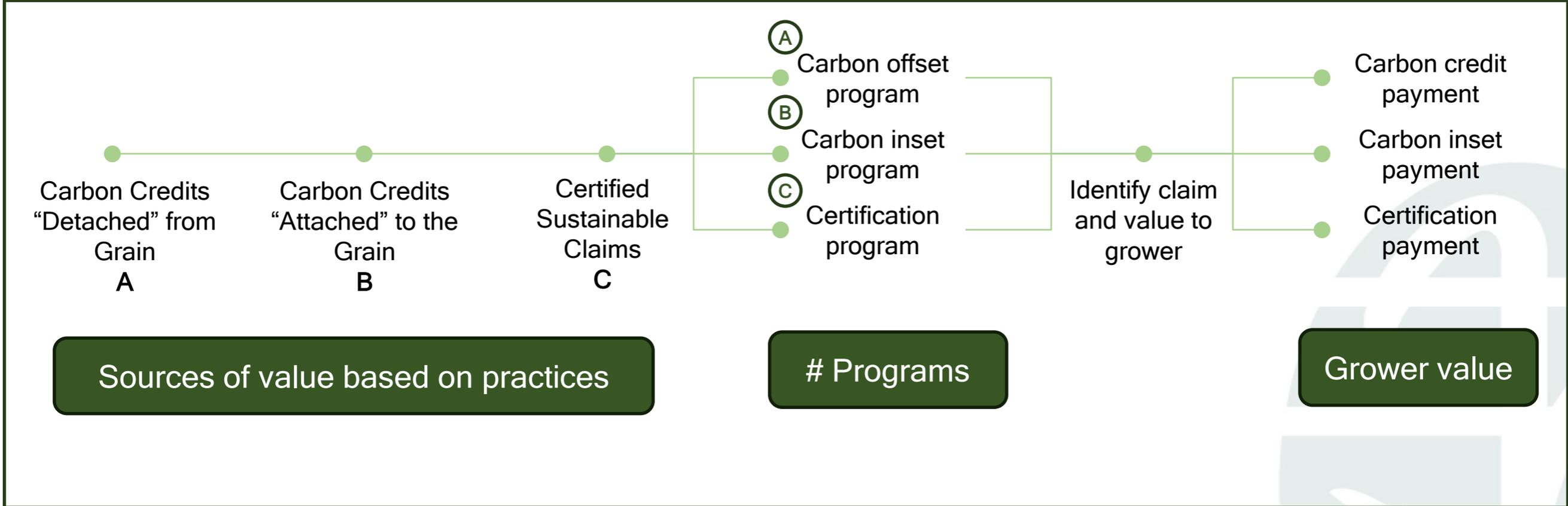
Source C1 & 3: USDA-ARS and Univ. of Arkansas, Harrisburg, AR, Adviento-Borbe, 2022 et al. Ongoing experiment  
 C2: University of Arkansas, Stuttgart, AR, 2012. Simmonds et al, 2015 | C4: EMBRAPA, RS, Brazil. 2021-2022. Bueno Scivittaro, 2022.

# Hybrid rice can be grown profitably using less water than with continuous flooding systems



CASC (Continuous flood cascade distribution),  
 AWD (MIRI plus alternate wetting-drying flood management),  
 MIRI (Multiple-inlet rice flood irrigation),  
 ROW (Furrow-irrigated with end-blocking)

# Our offering for carbon and certification will allow growers to select their preferred sustainability program



# The carbon space drives higher income opportunities for farmers through sustainable farming programs

## WITH CHALLENGE COMES OPPORTUNITY

There is a lot of “carbon” noise in the market

RiceTec is piloting a US and India carbon program, building it incrementally to benefit from learnings

We are partnering to align our expertise in rice with other's expertise in carbon

RiceTec is farmer focused, returning the value of methane reduction to the farmers

