IRRI International Rice Research Institute

# REMET-RICE Newsletter

Reducing Methane Emissions from Rice Project

Issue 03 | January 2025

## Starting 2025 Strong: Updates, Wins, and What's Ahead!

# Exciting Advances in REMET-Rice Dry Season 2025 Experiments!

## Breaking new ground for low-emission rice farming systems

The REMET-Rice Project continues its mission to reduce greenhouse gas (GHG) emissions in rice systems by increased understanding of methanogenesis drivers and refining management practices. Key efforts also focus on improving the ORYZA simulation model to better predict GHG emissions under varying soil, climate, and management conditions.

Throughout the dry and wet cropping seasons of 2024, seven experimental sites were established at the IRRI experimental station in collaboration with the University of the Philippines Los Baños (UPLB). These trials addressed five critical research areas, including the validation of proven mitigation technologies, screening for low-emission rice varieties, soil amendment evaluations, soil microbiome profiling, and process modeling for GHG reduction strategies.

### KEY ACHIEVEMENTS OF 2024

- **Seven research experiments on greenhouse gas emissions**
- **Over 40 weeks of GHG emission measurements**
- **Over 10,000 soil samples collected**
- **More than 60,000 database records**
- **Protocols and SOPs for data collection and management developed and implemented**

The REMET-Rice project gears up for dry season 2025 (Jan-April) with continued and expanded experimental studies. This season, three core trials will progress with added treatments, refined monitoring strategies, and one experiment being redesigned for greater insight.

We invite you to collaborate with us on this exciting journey and look forward to sharing the outcomes of our experiments. Stay tuned!

## IRRI's REMET Team Engages with Shell HQ for ORYZA Model Training

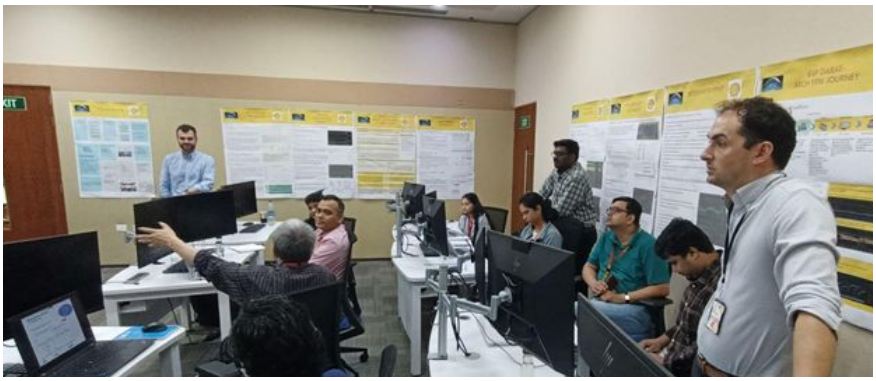
### Driving innovation on rice modeling

The REMET-Rice team visited Shell headquarters in Bangalore from 16 to 19 Sept for a dynamic ORYZA model training workshop. The hands-on technical workshop covered data preparation for model calibration, on the newly translated Python version of the ORYZA model, now enhanced with GHG simulation capabilities currently in the testing phase.

On top of the training, the IRRI team visited Tamil Nadu Agricultural University (TNAU) and the Tamil Nadu Rice Research Institute (TRRI) in Aduthurai, followed by a tour of IRRI South Asia Regional Centre's (ISARC) experimental station and labs, with discussions on their ongoing GHG studies.

This visit plays a pivotal role in the modelling team's global benchmarking efforts for GHG datasets, contributing to a collaborative network that spans across borders.

For further details on this global initiative, you may visit this link.



# Charting the Future: REMET-Rice Annual Review and Planning Meeting

## Reflect, refine, innovate: The REMET-Rice project annual review

The REMET-Rice Annual Review, held on 7 November and 2 December 2024, explored key findings from the dry and wet season trials, focusing on soil, crop, and methane emission patterns.



To improve future experimental studies, the team was divided into two groups to redesign experiments and develop plans for the validation trials and variety studies. The discussions also emphasized the integration of all the data gathered to better understand methanogenesis in rice fields and guide and inform the development of management packages reducing the GHG footprint in rice systems. Furthermore, the team outlined a detailed plan for the 2025 dry season experiments and the implementation of SMART project monitoring to support milestone achievement and publication opportunities.

## IRRI Leads GHG Training for Low-Emission Rice Systems

### Building skills and advancing GHG measurement standards in rice systems

From 25 to 29 November 2024, the International Rice Research Institute (IRRI) hosted the "GHG Emission in Rice Systems: Basics of Mechanisms and Standards for Measurements" training in Los Baños, Philippines. Thirty participants from India, Japan, Pakistan, Bangladesh, Cambodia, and the Philippines engaged in comprehensive sessions designed to build capacity in GHG monitoring for rice systems.

The training combined lectures, hands-on field demonstrations, and lab analyses, providing participants with skills to measure and mitigate GHG emissions in rice production effectively.

This initiative strengthens global capacity for sustainable agriculture and reinforces REMET-Rice project's commitment to low-emission rice production.

Stay tuned for more capacity-building events!

# Dr. Thi Bach Thuong Vo Presents at Tropentag 2024 Conference

## Showcasing cutting-edge high-throughput GHG measurement in rice systems


Dr. Thi Bach Thuong Vo, postdoctoral fellow of the REMET-Rice Project, attended the Tropentag 2024 conference in Vienna, Austria, from September 11-13. At this annual event focused on food security, natural resource management, and rural development, Dr. Vo presented her paper titled “Towards high-throughput system in detecting GHG emissions in rice production: Assessment of measurement approaches.”

The study evaluates the laser-based trace gas analyzers (TGA) for accurately measuring methane (CH4) and nitrous oxide (N2O) emissions in rice fields, offering a more efficient and mobile alternative to traditional methods. This approach, with its high resolution and immediate data collection, promises to advance the understanding of GHG emissions in rice systems and support more effective mitigation strategies.

Apart from the reported study at TT2024, Dr. Vo conducted varietal screening experiment in 2 seasons, 3 sites, and 12 rice varieties. Weekly GHG measurements over 13 weeks per season generated 2,808 data points, providing a robust foundation for assessing emission patterns and varietal differences. For large-scale applications, this approach enables real-time detection of low emissions, efficient data processing, and timely delivery of data to support policy decisions and carbon credit verification. By optimizing GHG measurements, Dr. Vo's work significantly advances efforts to reduce methane emissions in rice production, contributing to sustainable agriculture and climate action. For more information, contact Dr. Vo at t.vo@irri.org.

## Join the 2025 ORYZA Training Program for Practical Applications!

IRRI is excited to announce the upcoming ORYZA Training Program for Practical Applications, designed to equip participants with essential skills to effectively use the ORYZA crop model. The course will take place at the IRRI Headquarters in Los Baños, Philippines on 24-28 March 2025. This comprehensive training will familiarize participants with the ORYZA model, focusing on:

- Functions and data organization for running the model
- Experimental data collection for model calibration and evaluation
- Practical applications and new features developed in ORYZA

Registration Details:

- Deadline: February 7, 2025
- Register Online: Click here

Don't miss this opportunity to advance your skills in crop modeling and contribute to sustainable agriculture! Secure your spot today.

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IRRI makes rice systems **future-ready**!
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**Contributions from the Community:**
The strength of our newsletter lies in the diverse experiences and perspectives that you, our readers, bring to the table. If you have a story, research findings, or reflections on rice cultivation that you wish to share with the REMET-Rice family, we invite you to contribute.

**How to Contribute:**
Connect with our editorial team to share your ideas, articles, or any valuable content through the following contact information:

Email: a.ferrer@irri.org / e.manalo@irri.org

Your contributions will not only enrich our newsletter but also contribute to the collective knowledge that propels the REMET-Rice project forward.

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