



# Opportunities and Challenges for Precision Farming and Mechanization in Rice Production in Vietnam

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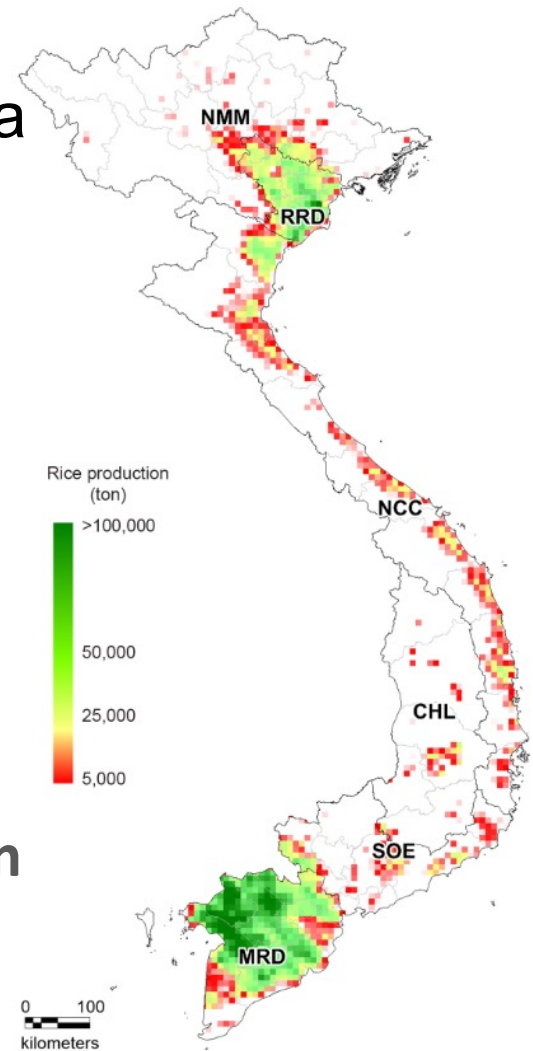
# Rice production in Vietnam

**Vietnam:** Area of cultivation: 7,278 million ha

**MRD:**

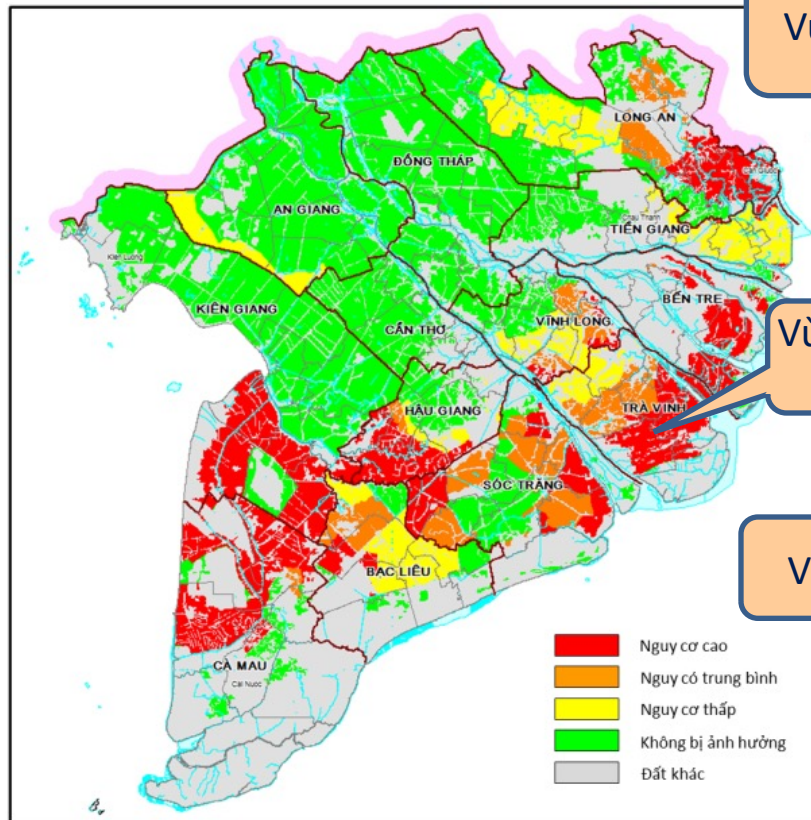
- Area of seeding: **3.9 million ha/year**
- Total productivity: **23.8 million tons** (56% of whole country)
- Average productivity: **6.0 tons/ha**
- Number of annual rice seasons: **3 seasons**
- Provide **90%** of total exported rice of Vietnam

*(Source: General Statistics Office of Vietnam, 2020)*





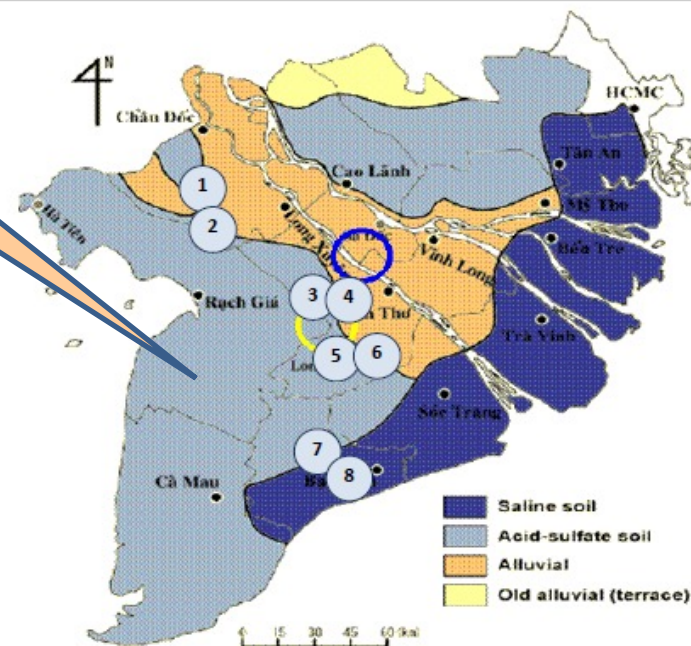
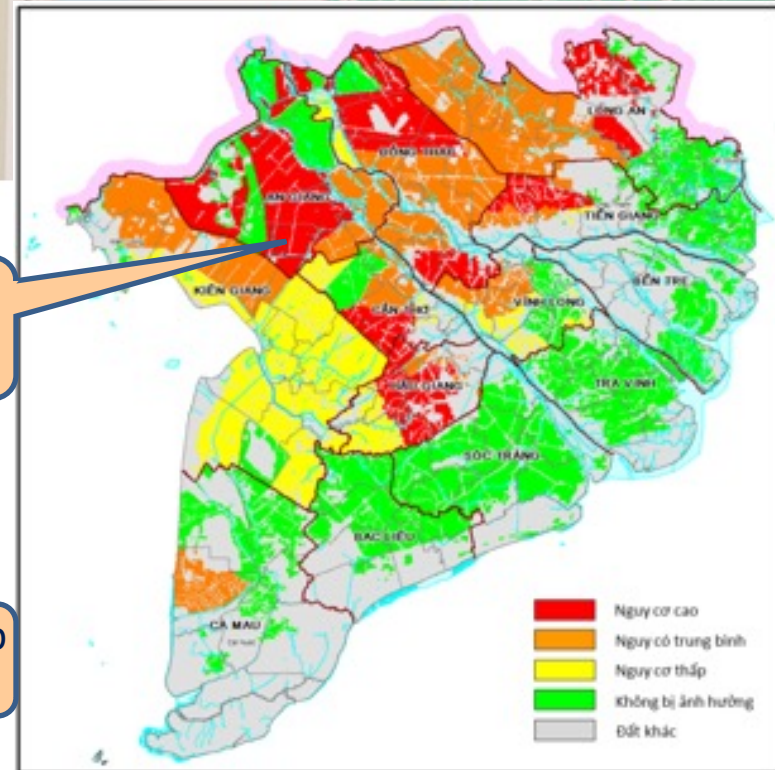
# Challenges for rice production in MRD



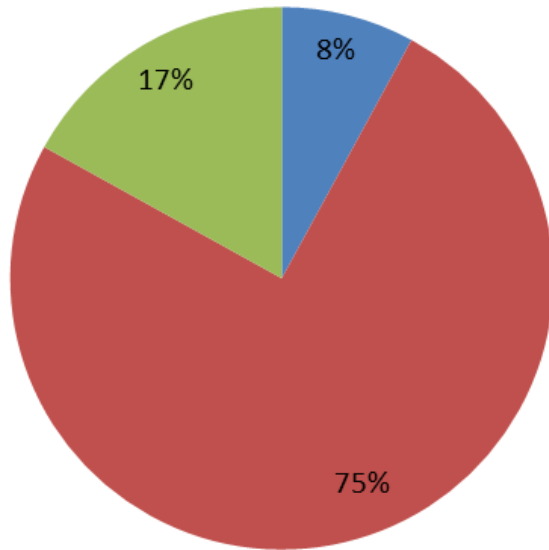
Vùng ngập, lũ

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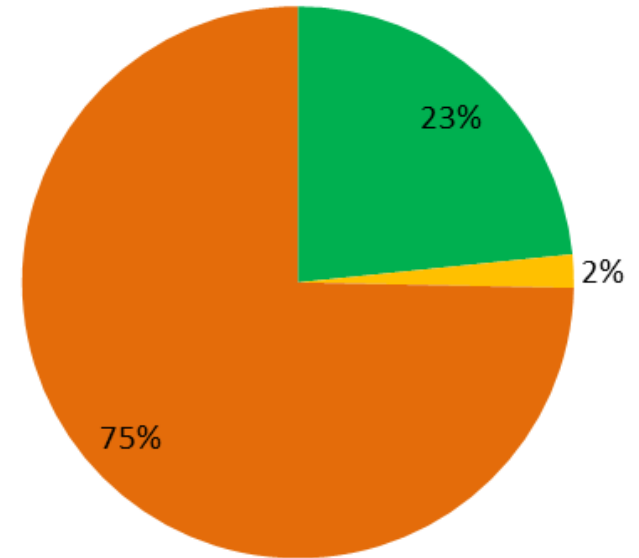


# Rice production is a source of GHG emission



■ CO<sub>2</sub> ■ CH<sub>4</sub> ■ N<sub>2</sub>O

(Source: MONRE, 2020)



■ Livestock | ■ Other ■ Rice

CH<sub>4</sub> emission in Vietnamese Agriculture

- Agricultural emission is 88,6 million tons of CO<sub>2</sub>e/year
- In agriculture, 75% of total gas emission is Methane (CH<sub>4</sub>)
- 75% of CH<sub>4</sub> emission in agriculture is from rice production



# Overuse of agronomic inputs due to the lack of mechanization and precision farming

## MRD of Vietnam:

- Manual broadcast seeding and blower seeding are the common practices
- High seeding rate: 120 – 180 kg/ha
- High N use: > 120kg N/ha
- Water management: continuous flood > 70%



Broad casting



Blower seeding





# Postharvest losses and rice straw burning

The harvest is done mostly by 100% combine harvesters, but still causes high postharvest losses due to:

- Improper operation (too fast running of combine harvesters)
- Delay of harvesting causing high postharvest losses (affected by the traders and drying and combine harvesting availability)
- Unoptimized logistics causing delay of drying and downgrade grain quality



# Rice straw burning

**Rice straw burning** is a common practice in Vietnam: >60%, due to:

- Lack of accessible knowledge and technologies for farmers
- In-field rice straw is too low or zero (<20 USD/ha)
- Logistics cost is high
- Lack of mechanized collection and processing technologies/ solutions
- Limited markets for rice straw





# Opportunities for emission reduction in rice production

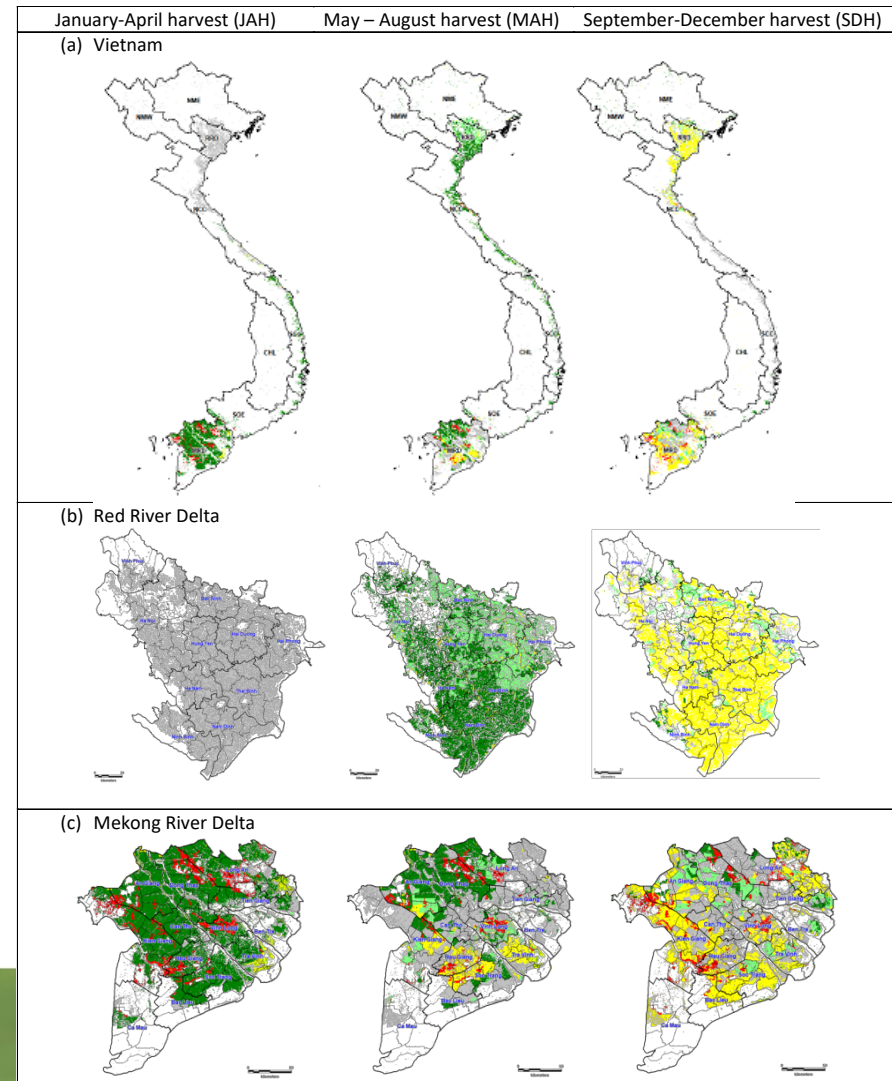
1. Update NDC of Vietnam to prioritize emission reduction in rice production
2. Some orientations in policies:
  - Project of GHG emission reduction;
  - Restructure of agriculture towards to sustainable production
  - Scale-appropriate mechanization to increase productivity
  - Reducing postharvest losses





# Opportunities for emission reduction in rice production

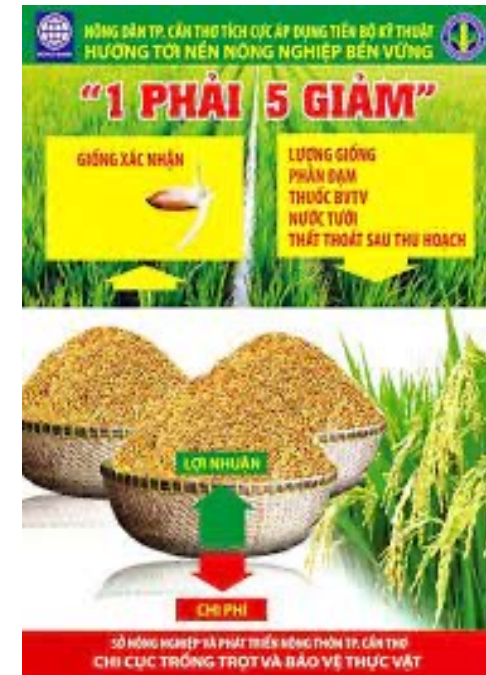
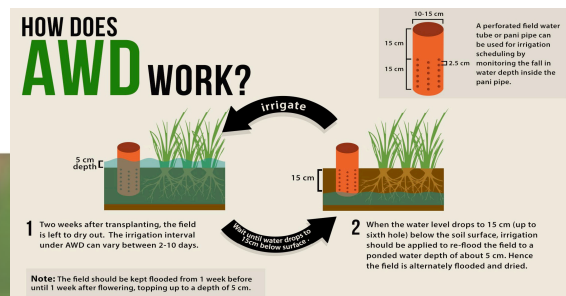
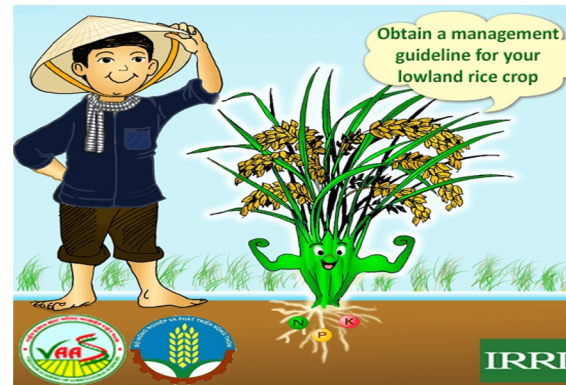
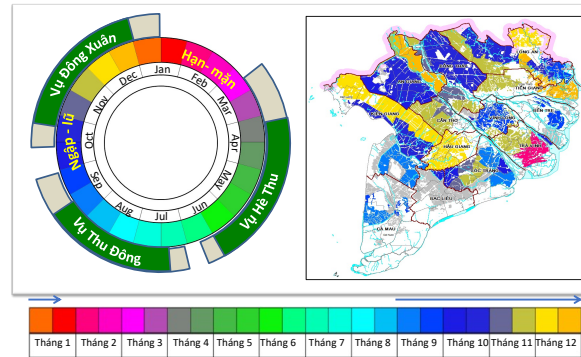
3. Great potential in applying emission reduction techniques (particularly: AWD)
4. Competence of professional agencies are being enhanced
5. Receive assistance from International resources (IRRI, CCAC, CTCN, GIZ, SNV,...)



# Innovations/solutions for sustainable rice production

- Climate-Adaptation Map integrated SSNM
- Alternate wetting and drying (AWD)
- Good rice practices (1M5R) and Sustainable rice production (SRP)

Điều chỉnh lịch thời vụ, chủ động tránh thiệt hại





## Precision farming

Laser land leveling

Precision crop establishment



## Mechanized rice straw composting (IRRI's technology)



# Recommendations of Department of Crop Production

**Continue cooperating with international organizations in general and CGIAR in particular in:**

- Researching, proposing and multiplying initiatives for sustainable, low-emission and modernized rice production
- Exchange of experience, resources among domestic and foreign agricultural research organizations
- Improving competence of officers and domestic research organizations
- Prioritizing activities related to modern, low-emission rice production in Mekong River Delta and Red River Delta





# Outscaling mechanization through Agritechnica Asia Live – Vietnam, August 2022



The banner features the event title 'AGRI TECHNICA ASIA LIVE' in large, bold letters. To the right, it specifies the location 'Việt Nam' and 'Thành phố Cần Thơ' for the dates '24-26 tháng 08 năm 2022'. Below the title, the theme 'Cơ giới hóa đồng bộ hướng tới nền nông nghiệp bền vững' is written. The background image shows a green tractor in a field with a globe in the sky. At the bottom, a row of logos includes the Ministry of Agriculture and Rural Development of Vietnam, the National Center for Horticulture, the National Center for Aquaculture, the National Center for Crop Production, the National Center for Livestock Production, the National Center for Forestry, the International Rice Research Institute (IRRI), the Deutsche Landwirtschafts-Gesellschaft (DLG), and VNU Asia Pacific.

**AGRI TECHNICA ASIA LIVE**

**Việt Nam**  
Thành phố Cần Thơ  
24-26 tháng 08 năm 2022

**Cơ giới hóa đồng bộ hướng tới nền  
nông nghiệp bền vững**

Logos: Ministry of Agriculture and Rural Development of Vietnam, National Center for Horticulture, National Center for Aquaculture, National Center for Crop Production, National Center for Livestock Production, National Center for Forestry, IRRI, DLG, VNU ASIA PACIFIC

MARD is a partner and co-organizer of IRRI and DLG



**Thank you  
very much!**

