Action Plan discussion (2): Mitigation and adaptation synergies

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Content

- Introduction and Principle
- Case study: Vietnam’s experiences
- Discussion to follow up

Why synergies: Adaptation and Mitigation

- ***Climate change impacts on agriculture and food security***
- ***Agriculture sector contributes to 14% of GHG emissions globally***
- ***In Vietnam for ex: GHG emissions from agriculture accounted up 70% CH4 and 90% N2O, and estimated to be about 64 million tons by 2020:***
- ***GHG Emission from Rice > 57%***
- ***Agriculture in gerneral and Rice production in particular, seen as a solution to reduce to GHG emissions.***

BUT GHG!!!: Rice production is the first emitter (>57%) in VN Agriculture sector (MONRE. 2011)

	CO2 Equ (MT)	%
Rice Field	37.4	57.5
Live stock (Fermentation & Manure)	11.1	17.2
Soils	14.2	21.8
Burning field	0.59	0.9
Crops Residues Burning	1.70	2.6
Total		100

Case 1: “Climate Change and Impacts on Rice Production in Vietnam: Pilot Testing of Potential Adaptation and Mitigation Measures”

Source: Project inception workshop

28th October, 2013, VAAS, Hanoi

Goal and objectives

- **The Goal of the Project** is to improve rice production under changing climate, and at the same time contribute to mitigation of green-house gases (GHGs) through pilot testing climate-smart rice farming systems.

- **The Objectives of the Project are:**

- - ***Rice farming systems that will be most vulnerable to climate change*** in the selected study areas (droughts and saline intrusion) identified: both in Mekong River Delta and Red River Delta
- - Selected ***climate-smart measures that will help in adaptation and mitigation*** (improve rice production, reduce GHGs emissions) pilot tested: (NAM DINH, TRA VINH, SOC TRANG)
- - I***nstitutional framework for implementing potential adaptation and mitigation measures*** tested in the Project;
- - ***Stakeholders, women and farmers engaged*** in developing climate-smart agriculture (CSA) practices and dissemination of results .

Expected project outcomes

- *Potential agricultural adaptation and mitigation measures can be expanded*
- *Promotion for technology advanced*
- *Strengthening the link between science, stakeholders and policy.*
- *Ensure farmer food security and income*
- *Contribution for GHG mitigation from agriculture sectors*

Desired impacts

- *Improved adaptive capacity of the farmers.*
- *Increased awareness among stakeholders on climate change adaptation and mitigation*
- *Improved understanding of Climate change impacts on rice and better adaptation*

Case 2/ IFAD: Adaptation to Climate Change in the Mekong Delta (AMD)

"Support **sustainable livelihoods** for the rural poor in a changing environment, **strengthening the adaptive capacity** of target communities and institutions to better contend with climate change"

2 main components:

- **Capacity building for climate change adaptation** with participating communities, institutions and provinces for the agriculture and rural development sector

- Investing in sustainable rural livelihoods by **providing the financial means and facilities to scale up** the results of community-based research and development in this sector.

➔**BEN TRE & TRA VINH provinces: PRIOTIZE CSA in rice based cropping systems**

Case study 3

The Project

“Climate Smart Agriculture (CSA):

Capturing synergies between adaptation, mitigation and food security”

16 - 17 July 2015 | Hanoi, Vietnam

EPIC project http://www.fao.org/climatechange/epic/home/en/
http://www.fao.org/climatechange/mosaicc/en/

Since 2010 the Mitigation of Climate Change in Agriculture (MICCA)

Programme has contributed to making agriculture more climate-smart.

About Climate-Smart Agriculture (FAO)

Climate-smart agriculture (CSA) is an integrative approach to address these interlinked challenges of food security and climate change, that explicitly aims for three objectives:

(1) sustainably increasing agricultural productivity, to support equitable increases in farm incomes, food security and development;

(2) adapting and building resilience of agricultural and food security systems to climate change at multiple levels; and

(3) reducing greenhouse gas emissions from agriculture (including crops, livestock and sheries).

CSA invites to consider these three objectives together at different scales - from farm to landscape – at different levels - from local to global - and over short and long time horizons, taking into account national and local specifies and priorities

Moving forward: Scaling-up Climate Smart Agriculture

(i) the analysis of trade-offs and synergies between adaptation, mitigation and food security, benefit-cost analysis of potentially CSA practices in rice based cropping systems,

(ii) the identification of barriers to adoption and enabling factors to promote CSA in rice production

(iii) analysis to identify the most suitable strategies to decrease the effects of extreme events: Reduce impact (adaptation) in rice production in vulnerable areas

(iv) value chain analyses to make rice production more value added/ SMART

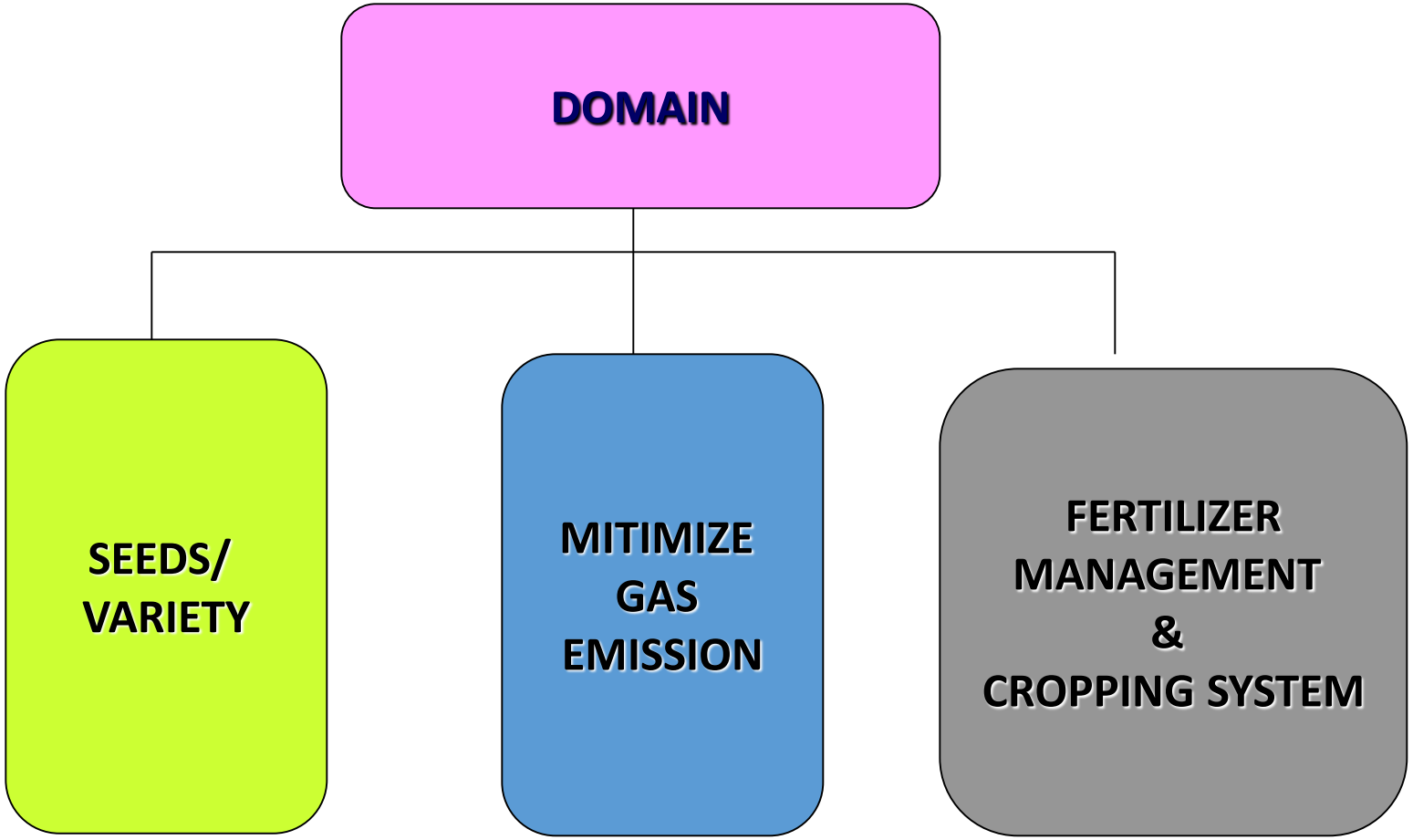
Case: Affect of climate change in the Mekong Delta

- **Sea level has risen between 2.5 to 3.0cm per decade during the last 50 years**

> 50% of rice areas in Mekong delta is affected by sea level rise

- **Saline intrusion affected 50,000 ha of wet season rice annually in coastal area in the Mekong Delta.**
- **In the next 5 to 10 years, the shortage of fresh water will be double due to water exploitation in the upper stream area**
- **Salinity at 4‰ intrusion into the inland 50 – 70 km more**
- **==> salinity & drought influences on the growth of the rice plants**

Rice technologies coping with climate change



RICE SEEDS/ VARIETY DEVELOPMENT TOLERANT TO STRESSES CAUSED BY CLIMATE CHANGE

Breeding for submergence tolerance (Lang, et al, 2013):

-A number of lines (OM 8927, OM 6161, OM 6162, & TLR 7) showed good survival and recovery after submergence.

- 6 varieties identified as highly tolerant to stagnant flooding: OM 7347, Can Tho 2, Can Tho 3, OM 10000, OM 10041, OM 8928

Breeding for salinity tolerance (Lang, et al, 2013, C. Hoa, 2012):

-varieties identified as highly tolerant to salinity: OM 6677, OM 10252 , OM 6976, OM 4900

Planning:

Combining tolerance of excess water stress with drought, salinity & pest

MITIMIZE GAS EMISSION

- Methane emission mainly through rice plant(80%). Farmers in the MD usually seeding with high rate #200kg/ha. The possibility to reduce methane emission by using low seed rate but to maintain high yield

CH4 emission rates was low at seed rate 100 kg/ha than 140 kg/ha

Transplanting space affects N2O emission rates Not too deep plough => reduce CO2

Fertilizer, manures and water management

- Farmers in MD mainly use inorganic fertilisers while crop residues are wasted or being burnt. Both of these may increase GHG emission.

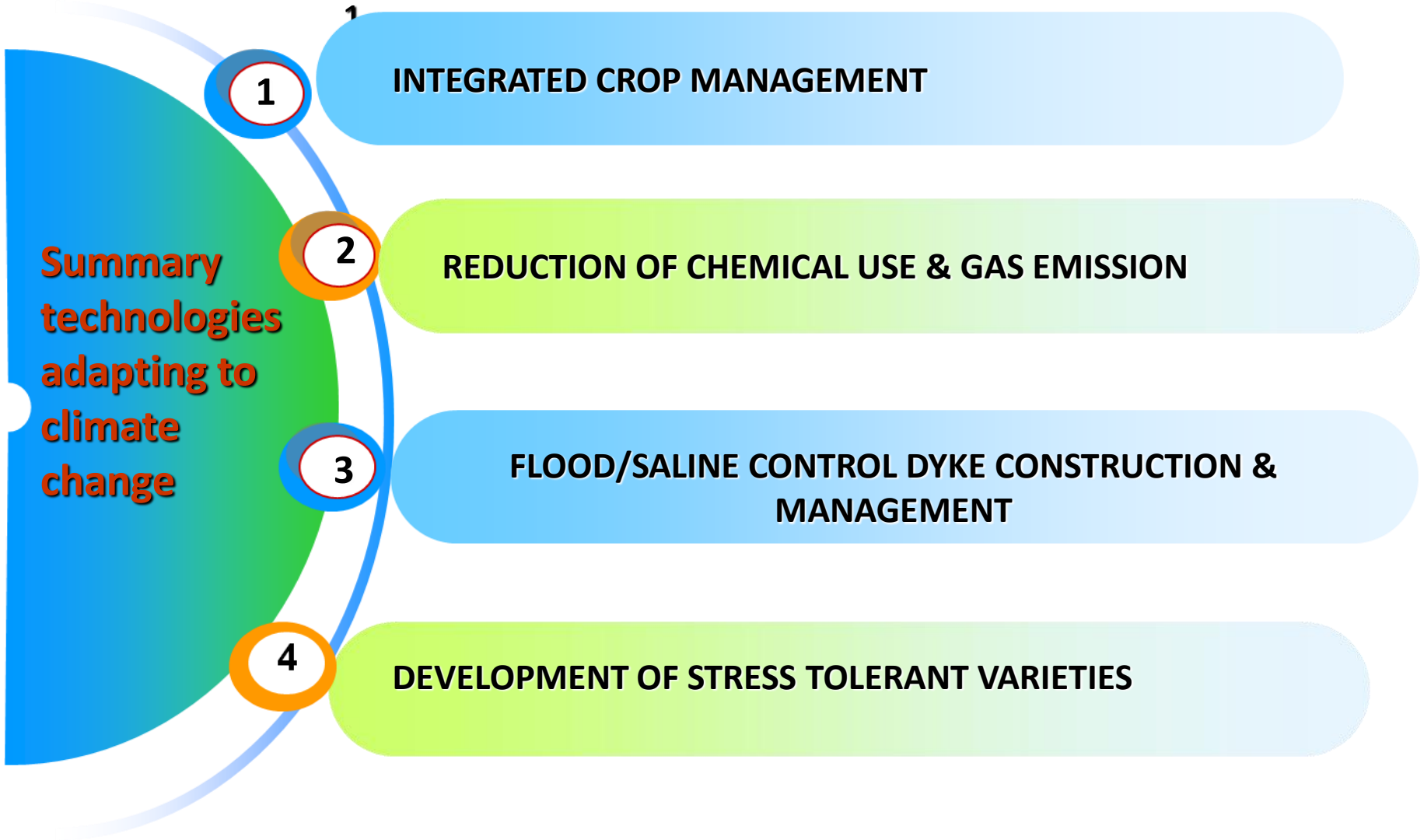
- **Rational Organic & inorganic fertilizer application reduces gas emission (CH4, N2O) if combination with water management- AWD**
- **Higher N application, the higher N2O emission rate.**
- **P rate does not affect on gas emission**
- **Methane and nitrous oxide emission is closely related with soil water content (water depth).**
- **Fertilizer application based on plant needs (SSNM)**

AWD

- reduces 2-3 irrigation/crop season
- saving 29-38% water amount
- rice yield increases 5-10% compared with continuous water standing
- Reduces soil toxicity=> well root development
- stiff rice stems => reducing lodging

➔Reducing irrigation cost

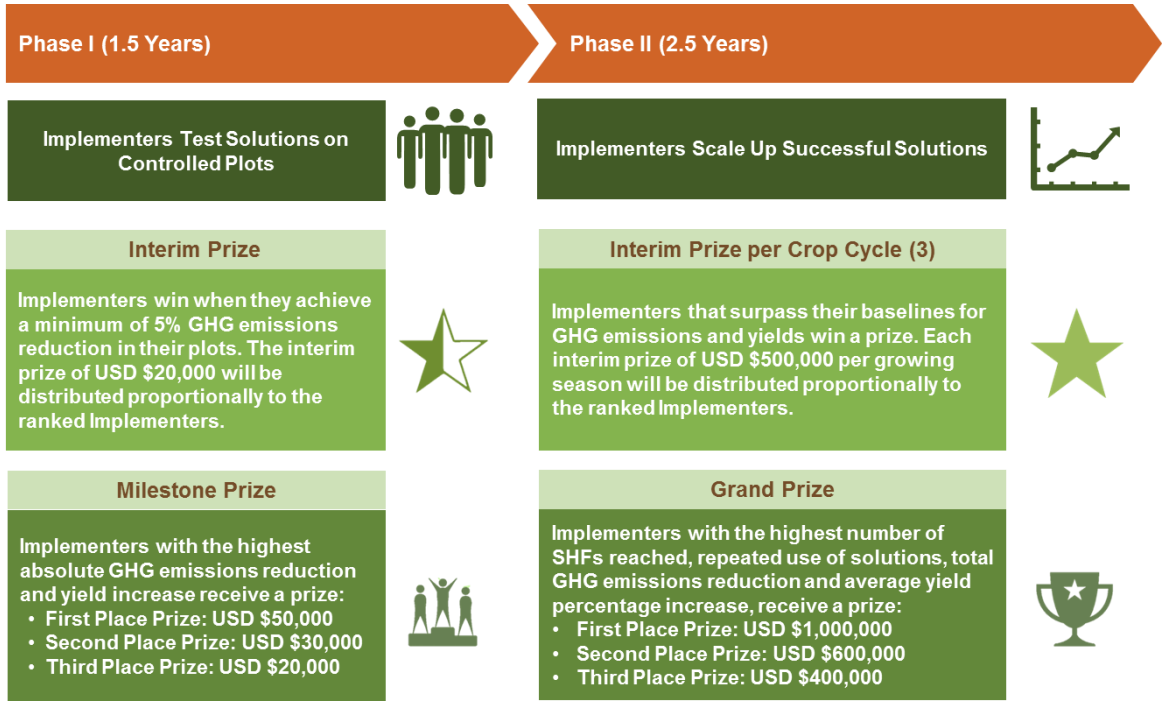
AWD combined with rational fertilize dose reducing gas emission


Summary technologies adapting to climate change
1
INTEGRATED CROP MANAGEMENT
2
REDUCTION OF CHEMICAL USE & GAS EMISSION
3
FLOOD/SALINE CONTROL DYKE CONSTRUCTION & MANAGEMENT
4
DEVELOPMENT OF STRESS TOLERANT VARIETIES

Tools/ Discussion

- Adaptation/ Mitigation/ CBA studies: Modelling with scenarios of the climate changes (DSSAT, DNDC, AQUACROP…)
- Measures to adapt/ Promising CSA in rice production/ rice based cropping systems
- Verification process/ plot, field, areas, land scape, agro-ecological zones (sampling or remote sensing?)
- Plot testing
- Scaling up
- Mechanism to support/ encourage/ CDM or Prix: PUSH or PULL

Coming up: AgResults Vietnam GHG Emissions Reduction Pilot Project



Thank you very much