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GLOBAL LEARNING AND EVIDENCE EXCHANGE  
**CLIMATE-SMART AGRICULTURE**

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# Sustainable Rice Production in the Mekong River Delta (MRD) Under Climate Change

Leocadio Sebastian, Regional Program Leader of Climate Change, Agriculture and Food Security (CAAFS) Southeast Asia



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## LEARNING OBJECTIVES

1. The need to focus on applying complementary climate-smart agriculture (CSA) portfolios in coping with climate change challenges
2. The link of early warning and forecast systems with CSA options is very important
3. Integration of CSA portfolios at the landscape level is an important consideration



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## ACKNOWLEDGMENT

Funding for the Climate Change affecting Land Use in the Mekong Delta: Adaptation of Rice-based Cropping Systems (CLUES) was provided by the Australian Centre for International Agricultural Research (ACIAR).

Donor



Australian Government

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Project Lead



Partners

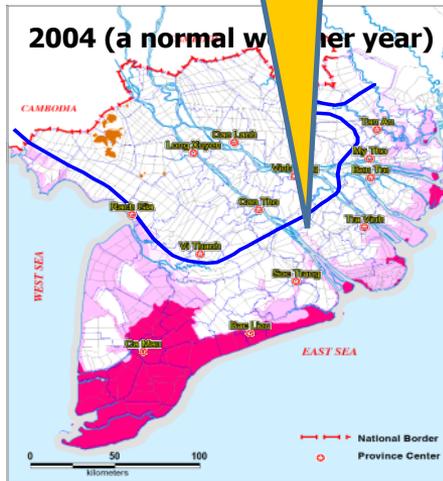


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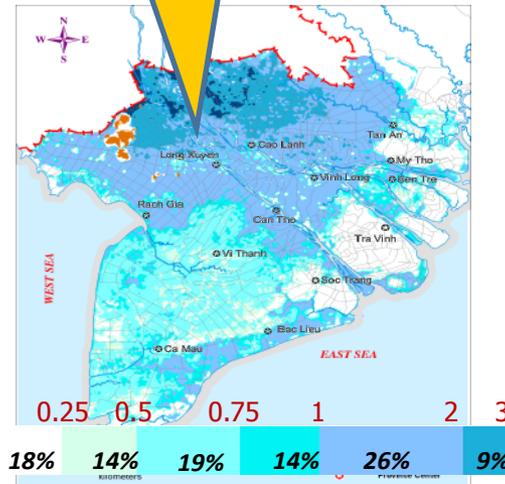


## CLIMATE RESILIENT RICE FOR MRD: MULTIPLE CHALLENGES

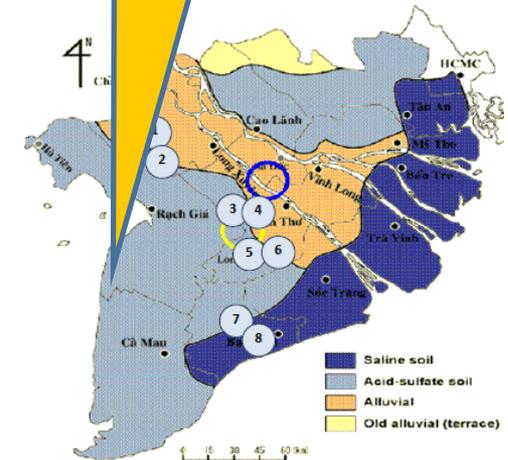
Salinity Intrusion



Flood/Submerge Zones



Acidic Sulfate Soils



Drought, brown plant hopper, bacterial leaf blight (serious problem), rice blast (serious problem)

Results of CLUES project



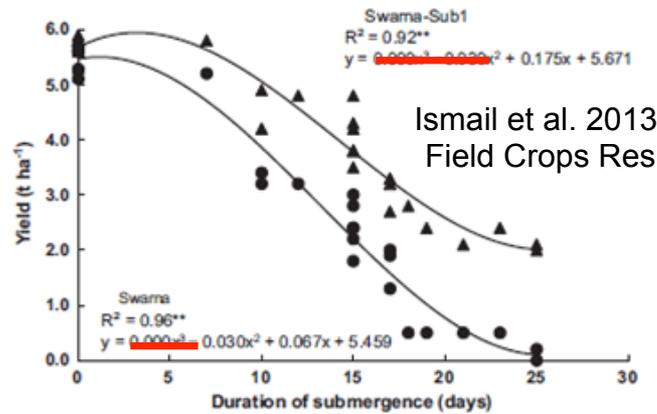
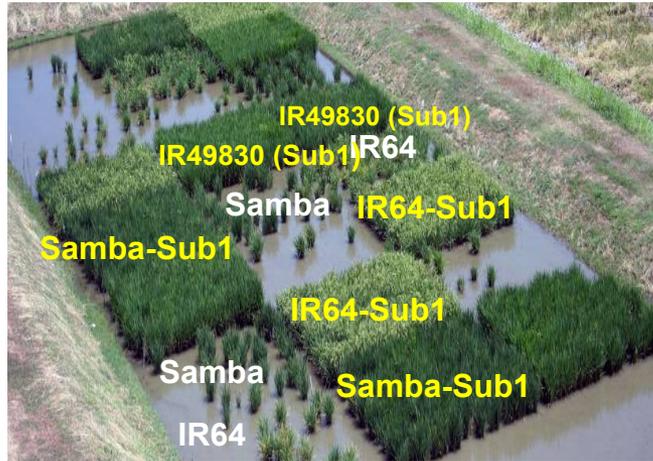




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## Submergence Tolerance



## Salt Tolerance



Before



After

Results of CLUES project



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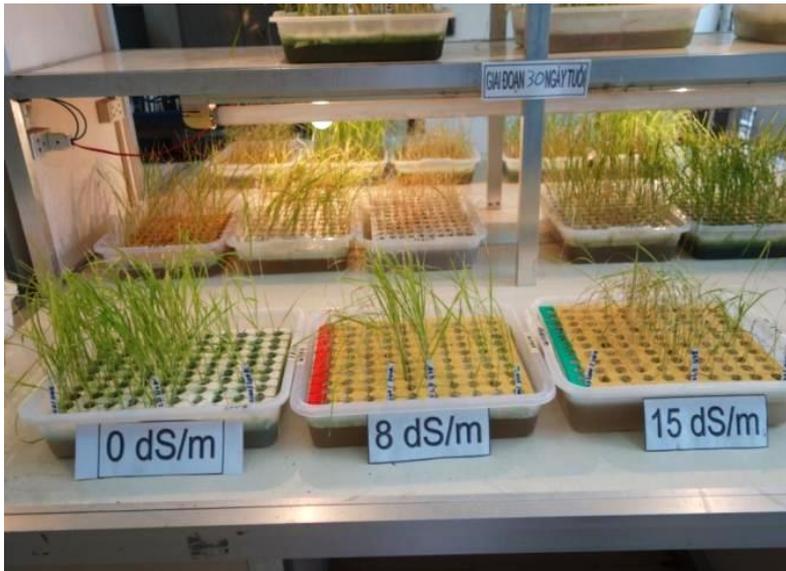


Australian Government  
Australian Centre for  
International Agricultural Research



## FUTURE CLIMATE-RESILIENT CROPS

Grain Quality + Submergence Tolerance + Salinity Tolerance +  
Anaerobic Germination + Others



Salinity Screening



Anaerobic Germination





## WATER SAVING TECHNIQUES IN RICE



### Benefits of AWD

- 30% water savings
- Better crop performance (root development, “stronger” plants, less lodging, fewer diseases)
- Lower GHG emission



Results of CLUES project



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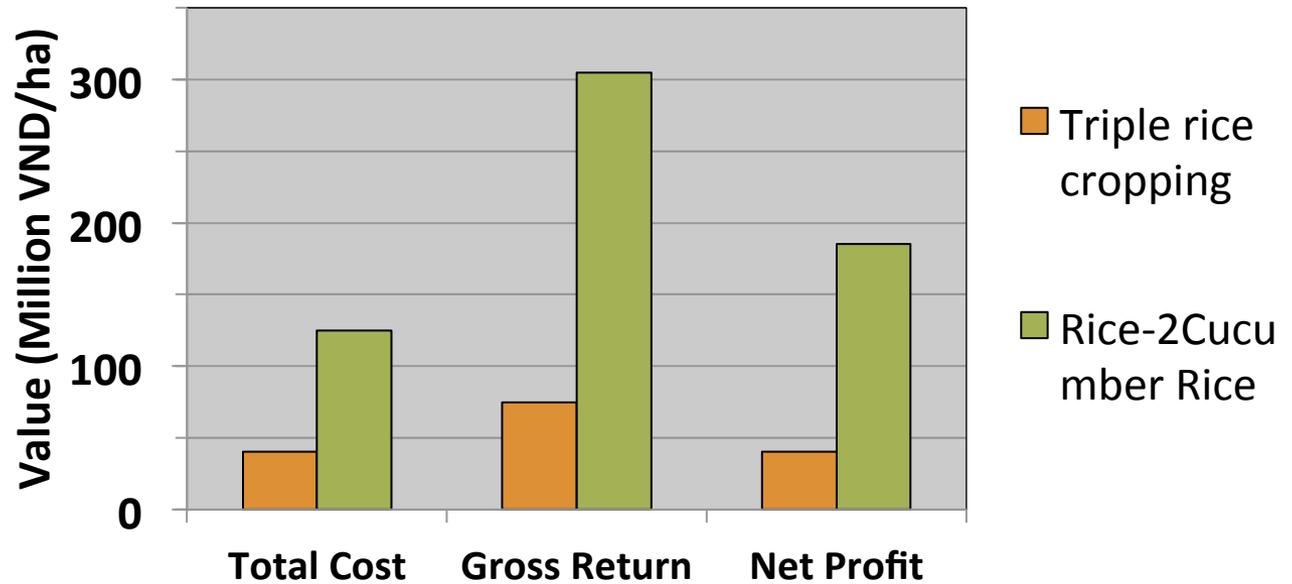


## CROP DIVERSIFICATION OPTIONS

Cost comparison, return and profit of two cropping systems in 2013  
(Million VND/ha)



Cucumber at Vi Dong 25 days after sowing



Results of CLUES project



Australian Government

Australian Centre for International Agricultural Research



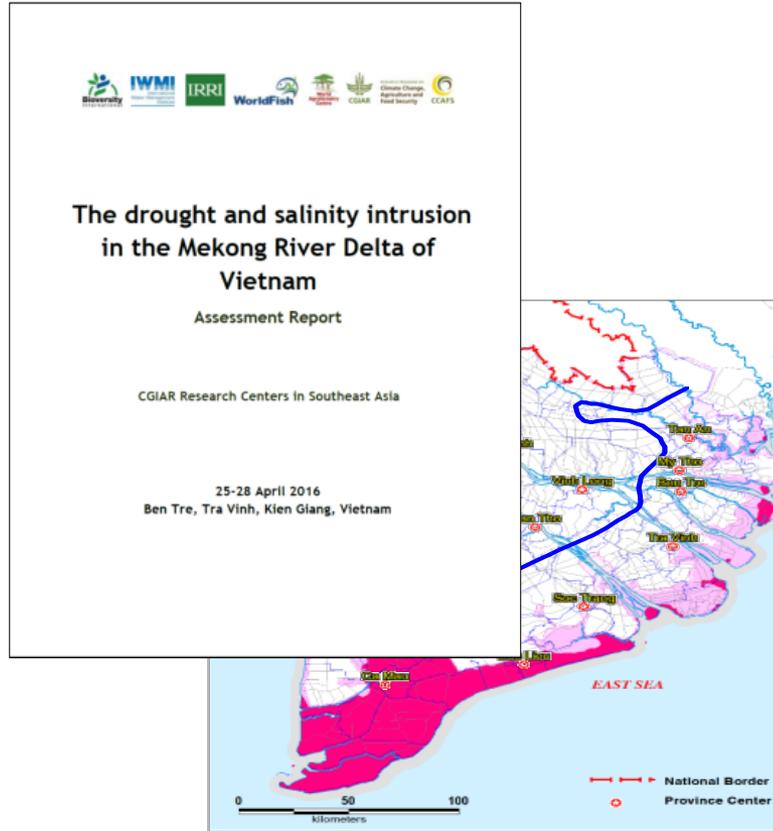
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2004 (a normal weather year)

CLUES Project

“Although official warnings of expected salinity and drought problems during the Dong Xuan season generally reach farmers early, these warnings did not translate into adjusted agricultural production on a large scale.

Warnings have been ignored, either because the expected severity wasn't communicated strongly enough or because of a lack of alternatives greater than the production subsidy given to farmers.”



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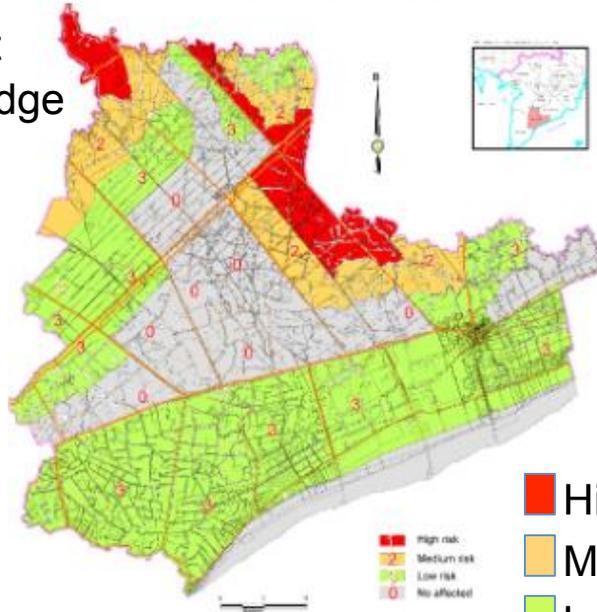
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## LINKING EARLY WARNING WITH ACTION

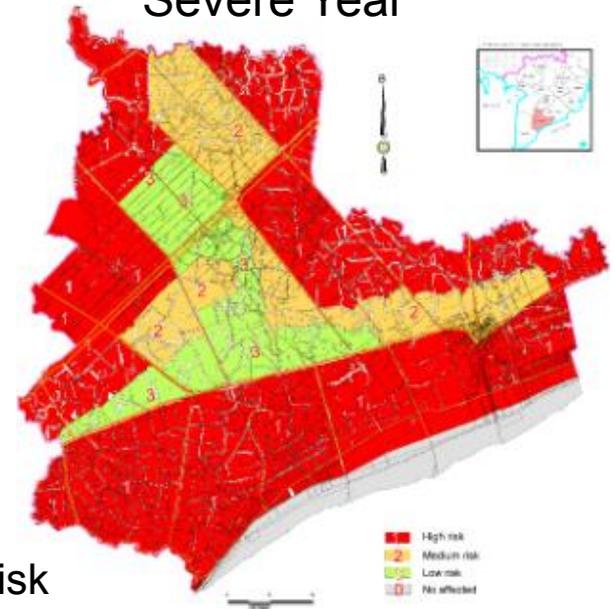
CLUES Project  
+Local Knowledge  
+Topo map  
+Hydro map  
+Infra map



### Normal Year



### Severe Year



- High Risk
- Medium Risk
- Low Risk
- Not Affected



## CLIMATE-RESILIENT CROPS TO FARMS TO VILLAGES/LANDSCAPE

### Early Warning System

Carbon Smart	Water Smart	Yield Smart	Risk Smart	Community Smart
Site-specific nutrient management	Rice rotation with other crops	Stress-tolerant rice varieties	Salinity, drought, flood monitoring and land use planning	Improved stakeholder interaction (Climate-Smart Villages)
Alternate wetting and drying (AWD)				
Mobile phone based agro-advisories				





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## CLIMATE-SMART VILLAGES (CSVs)



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## TAKE AWAY MESSAGES

- Several technological options and approaches for CSA have been identified for the MRD, but concerted programs are needed for large-scale adoption by farmers and, where appropriate, linked with actions in response to early warnings and forecasts.
- CSA options will need to be integrated into future policy shifts (e.g., from quantity to quality targets for rice production) to enhance sustainability of rice production in the MRD.
- Adaptation to climate change cannot be seen in isolation from development inside the delta and in the wider Mekong Basin, namely infrastructure development.





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