

2012 Technical Report per Activity

Each Program Participant must provide a small remark against each activity/deliverable to indicate the status of the activity (2-4 sentences required per activity) using the form below. Updated data from the current partners is also required.

CAAFS Center Led Activities IRRI - International Rice Research Institute

Activity No. 145					
Activity title	Assessing climate change impacts and adaptation pathways in major rice growing areas with specific vulnerabilities				
CAAFS Objective (select from drop list)	1.1 Adapted farming systems	CAAFS Milestone No. (select from drop list / for further details go to CCAFS 2012 - 2015 LOGFRAME sheet)	1.1.1 2015 (2)		
Activity objectives (what the activity aims to achieve)	Objective 1	Assessing impacts of sea level rise and adaptation strategies in rice-based systems in mega deltas of S and SE Asia			
	Objective 2	Compiling a GIS data base on regional/ seasonal hot spots of heat stress in conjunction with rice cropping calendars			
	Objective 3	Assessing gender-specific roles in decision making related to climate-smart agriculture			
	Objective 4	Surveying national technology campaigns in terms of synergies with adaptation strategies			
Activity status	Completed				
Insert a small remark to indicate the status of the activity. (2-4 sentences required per activity)	In 2012, the IRRI-CAAFS activities in Theme 1 encompassed studies on deltas and regions prone to heat stress under climate change. We also conducted farming system approaches and gender studies to assess the viability of different technological adaptations. The results clearly revealed the site-specific distinctions for defining adaptation strategies as local conditions largely vary in terms of hydrology and temperature regimes. Technological changes may solve one specific stress, but – unless thoroughly assessed – these changes also create new socio-economic and biophysical risks for rice production system.				
Deliverables status (You may add any unexpected deliverable)	Type	Description	Year	Status	Format
	Data	A comparative impact assessment of sea level rise on rice production in delta regions and potential adaptation strategies	2012	Completed	Plain text (*.txt)
	Data	Spatial analysis of heat stress occurring at sensitive growth-stages of rice plants	2012	Completed	GIS raster (ESRI Grids, GeoTiff, etc)
	Reports, publications	Identification of gender roles in coping with aggravating climate extremes in rice-based farming households	2012	Completed	Document (*.doc, *.odt, *.pdf)
	Reports, publications	Identifying synergies of adaptation strategies and farming technology campaigns for improved resource use efficiencies in rice-based systems	2012	Completed	Document (*.doc, *.odt, *.pdf)
	Acronym		Name		
	CSIRO		Australian Commonwealth Scientific and Research Organization		
	ARI - Advanced Research Institution				
	Contact Point Full Name		Contact Point Email		
	Benneth Macdonald		Ben.Macdonald@csiro.au,		
	Acronym		Name		
	IWMI		International Water Management Institute		
	ARI - Advanced Research Institution				
	Contact Point Full Name		Contact Point Email		
	Chu Thai Hoanh		c.t.hoanh@cgiar.org		
	Acronym		Name		
	CTU		Cantho University, Vietnam		
AI - Academic Institution					
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Le Quang Tri		lqtri@ctu.edu.vn			
Acronym		Name			
AGI		Agricultural Genetics Institute, Vietnam			
NARES - National agricultural research and					
Contact Point Full Name		Contact Point Email			
Le Huy Ham		lhham@agi.ac.vn,			

Current Partners

NARES - National agricultural research and training center	Acronym	Name	
	CLRRI	Cuu Long Delta Rice Research Institute	
	Contact Point Full Name		Contact Point Email
	Nguyen Thi Lang		ntlang@hcm.vnn.vn,
ARI - Advanced Research Institution	Acronym	Name	
	KIT	Karlsruhe Institute of Technology, Germany	
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	Harald Kunstmann		Harald.Kunstmann@kit.edu
NARES - National agricultural research and training center	Acronym	Name	
	SIWRP	Southern Institute for Water Resource Planning	
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AI - Academic Institution	Acronym	Name	
	HUAF	Hue University of Agriculture and Forestry, Vietnam	
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2012 Technical Report per Activity

Each Program Participant must provide a small remark against each activity/deliverable to indicate the status of the activity (2-4 sentences required per activity) using the form below. Updated data from the current partners is also required.

CCAFS Center Led Activities IRRI - International Rice Research Institute

Activity No. 146						
Activity title		Quantifying region-specific losses in rice production caused by cyclones/ typhoons				
CCAFS Objective <i>(select from drop list)</i>		2.1 Identify and test innovations that enable rural communities to better manage climate-related risk and build more resilient livelihoods	CCAFS Milestone No. <i>(select from drop list / for further details go to CCAFS 2012 - 2015 LOGFRAME sheet)</i>		2.1.1 2015	
Activity objectives <i>(what the activity aims to achieve)</i>	Objective 1	Verifying or falsifying the often cited 'common wisdom' - i.e. that typhoons exert a major impact on rice yields in S and SE Asia				
Activity status		Partially completed				
Insert a small remark to indicate the status of the activity. <i>(2-4 sentences required per activity)</i>		The typhoon analysis in 2012 comprised the development of diagnostic tools for a comprehensive assessment to typhoon-induced damages in rice production: (i) A new typhoon index for assessing spatial damages in rice yields caused by given typhoons. (ii) Identification of location specific intensities and duration of typhoon events based on local weather records. ☐				
Deliverables status <i>(You may add any unexpected deliverable)</i>		Type	Description	Year	Status	Format
		Model tools and software	GIS data base on historical yield losses caused by cyclones/typhoons in S and SE Asia	2012	Partially completed	Database (*.sql, *.mdb, etc)

2012 Technical Report per Activity

Each Program Participant must provide a small remark against each activity/deliverable to indicate the status of the activity (2-4 sentences required per activity) using the form below. Updated data from the current partners is also required.

CCAFS Center Led Activities IRRI - International Rice Research Institute

Activity No. 147						
Activity title		Promoting mitigation projects in rice-based production systems in South and Southeast Asia (preparation phase)				
CCAFS Objective <i>(select from drop list)</i>		3.3 Test and identify desirable on-farm practices and their landscape-level implications	CCAFS Milestone No. <i>(select from drop list / for further details go to CCAFS 2012 - 2015 LOGFRAME sheet)</i>	3.3.1 2015		
Activity objectives <i>(what the activity aims to achieve)</i>	Objective 1	Developing guidelines on Measurement (incl. new measurement approaches), Reporting and Verification				
	Objective 2	Field testing of rice mitigation strategies and their perceptions by females in selected regions and production systems of SE Asia				
	Objective 3	Quantifying GHG emissions from straw burning as a function of straw quality and moisture				
	Objective 4	Field testing of rice mitigation strategies in selected regions and production systems of SE Asia				
Activity status		Partially completed				
Insert a small remark to indicate the status of the activity. <i>(2-4 sentences required per activity)</i>		The preparation phase for promoting mitigation projects gave emphasis on the development of the guidelines for measurement, reporting and verification. Results in 2012 reconfirmed the concept of alternate-wetting-and-drying as the most promising mitigation strategy for rice which was shown in experimental farms as well as farmers' fields. Preliminary studies on gender roles in the Philippines revealed that effectively all field activities are done by men. While this may ultimately limit the role of women in stimulating AWD, other rice-producing regions including Vietnam may show different gender roles that will be investigated in a comparative study in 2013.				
Deliverables status <i>(You may add any unexpected deliverable)</i>		Type	Description	Year	Status	Format
		Reports, publications	Defining MRV-guidelines (Measurement, Reporting and Verification) that comply with standards for CDM or voluntary carbon markets	2012	Completed	Document (*.doc, *.odt, *.pdf)
		Reports, publications	Analyzing the involvement of complete farm households (with emphasis on female engagement) in decision making in view of mitigation projects in rice-based production systems	2012	Partially completed	Document (*.doc, *.odt, *.pdf)
		Reports, publications	Testing innovative approaches and instrumentation for recording emission rates as a means to ease future MRV requirements	2012	Completed	Document (*.doc, *.odt, *.pdf)
		Data	Systematic assessment of rice mitigation strategies in SE Asia stratified by region and production system	2012	Partially completed	Spreadsheet (*.xls, *.ods)
		Reports, publications	Facilitating a CDM methodology for preventing straw burning: quantifying emissions from baseline and alternative straw uses	2012	Partially completed	Document (*.doc, *.odt, *.pdf)
		Reports, publications	Improving the mechanistic understanding of mitigation effects in rice-based systems in terms of element cycles and ecosystem functions: field experiments	2012	Completed	Document (*.doc, *.odt, *.pdf)

Current Partners

NARES - National agricultural research and	Acronym	Name	
	PhilRice	Philippine Rice Research Institute	
	Contact Point Full Name	Contact Point Email	
	Constancio Asis, Jr.	tony_asis@email.philrice.gov.ph	
	Acronym	Name	
	IAERI	Indonesian Agricultural Environment Research Institute	
NARES - National agricultural research and	Contact Point Full Name	Contact Point Email	
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CG - CGIAR Center	Acronym	Name	
	ILRI	International Livestock Research Institute, Kenya	
CG - CGIAR Center	Contact Point Full Name	Contact Point Email	
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	ICRAF	World Agroforestry Centre, Kenya	
CG - CGIAR Center	Contact Point Full Name	Contact Point Email	
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AI - Academic Institution	Acronym	Name	
	HUAF	Hue University of Agriculture and Forestry, Vietnam	
AI - Academic Institution	Contact Point Full Name	Contact Point Email	
	Tran Dang Hoa	trandanghoa@huaf.edu.vn	
ARI - Advanced Research Institution	Acronym	Name	
	KIT	Karlsruhe Institute of Technology	
ARI - Advanced Research Institution	Contact Point Full Name	Contact Point Email	
	Klaus Butterbach-Bahl	Klaus.Butterbach-Bahl@kit.edu	
AI - Academic Institution	Acronym	Name	
	JLU	Justus Liebig University Giessen	
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	Volkmar Wolters	Volkmar.Wolters@allzool.bio.uni-giessen.de	

2012 Technical Report per Activity

Each Program Participant must provide a small remark against each activity/deliverable to indicate the status of the activity (2-4 sentences required per activity) using the form below. Updated data from the current partners is also required.

CCAFS Center Led Activities IRRI - International Rice Research Institute

Activity No. 148					
Activity title		Validation of simulation models on yields and emissions in rice production systems			
CCAFS Objective <i>(select from drop list)</i>		4.1 Explore and jointly apply approaches and methods that enhance knowledge to action linkages with a wide range of partners at local, regional and global levels		CCAFS Milestone No. <i>(select from drop list / for further details go to CCAFS 2012 - 2015 LOGFRAME sheet)</i>	4.1.2 2015
Activity Objectives <i>(what the activity aims to achieve)</i>	Objective 1	Validating and further developing of ORYZA2000 and DNDC for selected rice production areas			
	Objective 2	Defining "best-bet" options for mitigation and adjusting cropping in selected rice production areas			
Activity status		Partially completed			
Insert a small remark to indicate the status of the activity. <i>(2-4 sentences required per activity)</i>		The IRRI-CCAFS activities on modelling were composed of (i) capacity building of IRRI staff (Dr. B.O. Sander) through an advanced research institute (KIT, Germany), (ii) exploring the use of the improved ORYZA2000 model for Climate Change research, namely drought stress and salinity and (iii) networking with other institutes involved with modeling of climate change impacts on rice production			
Deliverables status <i>(You may add any unexpected deliverable)</i>		Type	Description	Year	Status
		Model tools and software	Validated simulation models on yields and emissions suitable for the use in decision support systems	2012	Partially completed
Current Partners		Acronym		Name	
		AgMIP		Agricultural Model Intercomparison and Improvement Project	
		Contact Point Full Name		Contact Point Email	
		Kenneth Boote		kjboote@ufl.edu	
		Acronym		Name	
		IFPRI		International Food Policy Research Institute	
		Contact Point Full Name		Contact Point Email	
		Gerald Nelson		G.Nelson@cgiar.org	

2012 summary report of activities and deliverables by Output level

Each Program Participant must prepare a succinct summary of activities and deliverables, organised by Output level of the CCAFS objectives. Length is dependent on budget size so please refer to the table on the explanatory notes.

CCAFS Center Led Activities	
IRRI - International Rice Research Institute	
Theme 1. Adaptation to Progressive Climate Change	
Objective 1.1 Analyze and design processes to support adaptation of farming systems in the face of future uncertainties of climate in space and time	
Outcome 1.1: Agricultural and food security strategies that are adapted towards predicted conditions of climate change promoted and communicated by the key development and funding agencies (national and international), civil society organizations and private sector in at least 20 countries	
Output 1.1.1 Development of farming systems and production technologies adapted to climate change conditions in time and space through design of tools for improving crops, livestock, agronomic and natural resource management practices	
Prepare a succinct summary of activities and deliverables, organised by Output level of the CCAFS objectives	A. A comparative impact assessment on sea level rise on rice production in delta regions and potential adaptation strategies In 2012, the IRRI-CCAFS activities were closely tied into the work on three bilaterally funded projects that assessed climate change adaptation in Vietnamese deltas, namely: (i) Mekong (CLUES = Climate Change affecting Land Use in the Mekong Delta: Adaptation of Rice-based Cropping Systems), (ii) Red River (DANIDA project = Improving Rice Tolerance of Submergence and Salinity in Vietnamese Deltas), and (iii) Vu Gia/ Thu Bon (LUCCI = Land Use and Climate Change Interactions in the Vu Gia-Thu Bon River Basin/ Central Vietnam). Collectively, these three deltas encompass a gradient in terms of size (Mekong > Red River > Vu Gia/ Thu Bon) as well as climate (dry-wet seasons in the South vs. summer-winter seasons in the North). Moreover, the projects differ in their approaches ranging from plant-focused adaptation (DANIDA project), climate/ hydrology impacts (LUCCI) to farming systems analysis (CLUES). Thus, the IRRI-CCAFS activities encompassed an intercomparison of the results obtained in these bilaterally funded projects. As common denominator, rice production in all Vietnamese delta regions has shown a remarkable increase over recent years – although the yield levels and time lines have evolved differently in the deltas. The Mekong Delta comprises extremely productive rice systems (up to 3 crops per year) as well as some low-yielding systems due to salinity intrusion. New dikes have increased rice yields in areas formerly affected by frequent flooding from river water. However, these rice production systems are now very vulnerable to heavy rainfall because of drainage problems during the period of high water level (that was previously without a rice crop). This successive nature of land use problems – the solution of one problem inherently creates a new problem or risk – represents a major caveat to the projected changes in the other delta regions and has to be taken into account for any adaptation planning.
	B. Spatial analysis of heat stress occurring at sensitive growth-stages of rice plants Spatial assessments of rice areas that are vulnerable to heat stress are important for planning and targeting appropriate adaptation and mitigation strategies to ensure food security. We identified area affected by daytime and nighttime heat stress by comparing daily maximum and minimum temperatures during critical rice growth stages from 1983 to 2011 against temperature thresholds obtained from published literature. Our assessment was done at the global scale and for each rice growing season for the years covered. The output includes a global map of rice areas at risk of heat stress and the frequency of occurrence of heat stress events during the period covered.
	C. Identification of gender roles in coping with aggravating climate extremes in rice-based farming households. The IRRI-CCAFS activities on gender roles focused in 2012 on studies conducted in the Philippines and Vietnam. In the Philippines, the objectives of the IRRI-CCAFS activities are (i) to understand how men and women perceive and respond to changing climate conditions, (ii) assess the gender-differentiated impact of submergence and (iii) identify the gender-differentiated adaptation strategies among rice farming households in Province of Tarlac, Central Luzon, Philippines.
Theme 2. Adaptation through Managing Climate Risk	
Objective 2.1 Identify and test innovations that enable rural communities to better manage climate-related risk and build more resilient livelihoods	
Outcome 2.1: Systematic technical and policy support by development agencies for farm- to community-level agricultural risk management strategies and actions that buffer against climate shocks and enhance livelihood resilience in at least 20 countries	
Output 2.1.1 Synthesized knowledge and evidence on innovative risk management strategies that foster resilient rural livelihoods and sustain a food secure environment	
Prepare a succinct summary of activities and deliverables, organised by Output level of the CCAFS objectives	The typhoon analysis in 2012 comprised the development of diagnostic tools for a comprehensive assessment to typhoon-induced damages in rice production: (i) A new typhoon index for assessing spatial damages in rice yields caused by given typhoons. This point model computes rice yield losses as a function of crop stage alongside with typhoon-specific data on rainfall and wind speed obtained from internet sources (e.g. JTWC). (ii) Identification of location specific intensities and duration of typhoon events based on local weather records in combination with rainfall and wind speed classes. These tools will form the basis for a comprehensive assessment of typhoon damages on rice production across various spatial and temporal scales. This will encompass assessment ranging from village to national level as well as a historical trend analysis of typhoon frequencies and tracks.
Theme 3. Pro-Poor Climate Change Mitigation	
Objective 3.3 Test and identify desirable on-farm practices and their landscape-level implications	
Outcome 3.3: Key agencies dealing with climate mitigation in at least 10 countries promoting technically and economically feasible agricultural mitigation practices that have co-benefits for resource-poor farmers, particularly vulnerable groups and women	
Output 3.3.1 Analysis of mitigation biophysical and socioeconomic feasibility for different agricultural practices and regions, and impacts on emissions, livelihoods and food security	
Prepare a succinct summary of activities and deliverables, organised by Output level of the CCAFS objectives	A. Defining MRV-guidelines (measurement, reporting and verification) that comply with standards for carbon or voluntarily carbon markets There is a broad consensus among researchers working on GHG emissions from rice that more standardized GHG measurement protocols are needed to ensure global comparability of different studies. IRRI has approached this knowledge gap in different ways: (i) a literature study on closed chamber sampling protocols in order to distill most common practices (a manuscript was submitted to international journal but is still under review) (ii) in collaboration with Japanese colleagues, an article on appropriate frequency and time of day for methane measurements has been written. Results can be accessed from Minamikawa et al. 2012 (see publication list) (iii) experiments that compare results from different GHG sampling approaches (manual chamber, automated chamber, eddy covariance) have been set up and will be continued in 2013 (see below).
	B. Analyzing the involvement of complete farm households (with emphasis on female engagement) in decision making in view of mitigation projects in rice-based production systems The study aims to identify the socio-economic opportunities for women farmers in the adoption and dissemination of alternate-wetting-and-drying (AWD) technology which reduces the consumption of irrigation water and also GHG emissions. The research is being conducted in Central Luzon, Philippines. An ongoing feasibility study of AWD in Philippine rice production for the Clean Development Mechanism is being undertaken in the Angat Irrigation Scheme in the Province of Bulacan. Appreciation seminars, technological transfer briefs and preliminary interviews have been conducted with men and women farmers alike, focusing on the factors enabling and constraining their adoption of AWD. The study proposes the following: (i) employ women as 'field scouts' to monitor and report data on ponded water depth throughout the crop growth stage in compliance with the safe AWD water management practice. (ii) encourage women's involvement in the irrigators' association decision making to link irrigation water control, credit availability and household budget. These studies will be broadened and intensified in 2013 aiming at more comprehensive data and findings on the linkage between AWD adoption and gender.
	C. Testing innovative approaches and instrumentation for recording emission rates as a means to ease future MRV requirements Field measurements on GHG emissions and mitigation are typically conducted by the closed chamber approach based on manual sampling. As of now, however, there is no standardized measurement protocol available that incorporates QA/QC aspects for extrapolating emission rates based on singular measurements. The IRRI-CCAFS activities have used advanced measurement techniques yielding continuous records of emission rates as a reference point for defining uncertainties and possible correction algorithms for manual sampling procedures. The development of guidelines for Measurement, Reporting and Verification (MRV) was initiated in 2012 by using a technique based on photo-acoustic spectrometer (PAS). One instrument has been used in rice-wheat systems in India while another instrument has been purchased in the 2nd half of 2012. This innovative instrument is potentially capable of recording CO₂, CH₄ and N₂O concentrations in minimum time directly on a field. This technology would speed up flux measurements since no sample storage and GC analysis is necessary. However, different groups have reported problems especially in recording CH₄ concentrations due to interactions with water vapour. However, IRRI cannot disregard this technology. In the next step the MRV guidelines will be consolidated by more measurements in different locations, namely a new field experiment in Central Vietnam, and other advanced technologies, automated chambers and Eddy Covariance systems (see above).
	D. Systematic assessment of rice mitigation strategies in SE Asia stratified by region and production system

Theme 4. Integration for Decision Making	
Objective 4.2 Assemble data and tools for analysis and planning	
Outcome 4.2 Improved frameworks, databases and methods for planning responses to climate change used by national agencies in at least 20 countries and by at least 10 key international and regional agencies	
Output 4.2.1 Integrated assessment framework, toolkits and databases to assess climate change impacts on agricultural systems and their supporting natural resources	
Regional site and baseline characterization	
Prepare a succinct summary of activities and deliverables, organised by Output level of the CCAFS objectives	The IRRI-CCAFS activities on modelling were composed of (i) capacity building of IRRI staff through an advanced research institute and (ii) exploring the use of the improved ORYZA2000 model for Climate Change research. During a three-week stay of Dr. B.O. Sander at the Institute for Meteorology and Climate Research of the Karlsruhe Institute of Technology (KIT)/Germany, he gained insight into a new version of the biogeochemical model DNDC. In collaboration with KIT, this model was validated with field measurements of CH4 and N2O conducted by Dr. Sander. The model simulates GHG emissions very well but another experiment with a higher timely resolution is necessary to complete the validation. This will be done in 2013 ORYZA2000 model has been improved for quantifying the effects of abiotic stress on rice production, specifically those induced by climate change and extreme climatic events, as follows: (i) Simulations of drought stress for South Asia and Southeast Asia. (ii) Field and greenhouse experiments to quantify the effects of salinity stress on rice growth and yield. (iii) Active participation in the Agricultural Model Intercomparison and Improvement Project (AgMIP) While the improvement of ORYZA2000 is part of the GRISP agenda, the improved version of this simulation model is highly relevant for assessing climate change impacts and is utilized for IRRI's work on CCAFS objectives. ☐

List of publications that acknowledge CCAFS support

(a) Each Program Participant must list all publications that acknowledge CCAFS support. Only include publications that came out in final version in the calendar year. Please do not include journal papers under review (submitted etc) or out in electronic format ahead of print, except of course for electronic-only journals.

(b) Please try to format references in the Harvard style. A clear guide can be found here:

<http://libweb.anglia.ac.uk/referencing/harvard.htm>

(c) For journal articles, please indicate all of the references that are "green open access" with a single asterisk and those that are "gold open access" with a double asterisk. This is now a requirement from CGIAR donors. Green open access means that the authors have made a free copy available on a website. Gold open access means that the journal allows free download (either as standard practice or because the authors paid for it).

(d) For all publications that are up online, please provide a web link if possible. This will help us to advertise your work more widely.

CCAFS Center Led Activities IRRI - International Rice Research Institute

Publication 1	Type	Citation identifier
	Working papers	DOI:10.1080/20430779.2012.729988
	Citation Alberto MCR, Buresh RJ, Hirano T, Miyata A, Wassmann R, Quilty J, Correa T, Sandro J. Carbon uptake and water productivity for dry-seeded rice and hybrid maize grown with overhead sprinkler irrigation Field Crops Research	
Publication 2	Type	Citation identifier
	Journal papers	
	Citation energy balance and evapotranspiration between flooded and aerobic rice fields in the Philippines. Agricultural Water Management 98 (2011) 1417– 1430	
Publication 3	Type	Citation identifier
	Journal papers	
	Citation Alberto MCR, Wassmann R, Hirano T., Miyata A., Kumar A. Padre A., Amante M. (2012) Influence of climate variability on seasonal and interannual variations of ecosystem CO2 exchange in flooded and non-flooded rice fields in the Philippines; Field Crops Research	

Publication 4	Type	Citation identifier
	Journal papers	
	Citation Angulo, C., Becker, M., Wassmann, R., 2012. Yield gap analysis and assessment of climate-induced yield trends of irrigated rice in selected provinces of the Philippines. Journal of Agriculture and Rural Development in the Tropics and Subtropics (JARTS) 113, 61–68	
Publication 5	Type	Citation identifier
	Book chapters	
	Citation Bahuguna RN, Jagadish SVK, Coast O, Wassmann R (2012) Plant abiotic stress: rice responses and adaptation strategies to extreme temperatures. In: Encyclopedia of Agriculture and Food Systems -- Plant abiotic stress: temperature extremes. Edited by N. van Alfen Ismail, A.M.,` Mackill, D., Wassmann, R., Bouman, B. (2012) "Scuba Rice": Ensuring Food Security during a Flood. Waterleader 04: 46-47	
Publication 6	Type	Citation identifier
	Journal papers	
	Citation Jagadish SVK, EM Septiningsih, A Kohli, MJ Thomson, C Ye, E Redoña, A Kumar, GB Gregorio, R Wassmann, AM Ismail and Singh RK (2012) Genetic advances in adapting rice to a rapidly changing climate" Journal of Agronomy and Crop Science	
Publication 7	Type	Citation identifier
	Journal papers	DOI: 10.1080/20430779.2012.729988
	Citation Minamikawa K.; Yagi K, Tokida T; Sander BO; Wassmann R (2012) Appropriate frequency and time of day to measure methane emissions from an irrigated rice paddy in Japan using the manual closed chamber method. Greenhouse Gas Measurement and Management, vol. 2, issue 2-3, pp. 118-128	
Publication 8	Type	Citation identifier
	Journal papers	
	Citation Mitra S., Majumdar D., Wassmann, R. (2012) Methane production and emission in surface and subsurface rice soils and their blends. Agriculture, Ecosystems and Environment 158 (2012) 94–102	
Publication 9	Type	Citation identifier
	Working papers	
	Citation Ivionarity S, Wassmann R, Nelson A, Miya F, Jagadish SVK (2012) Chapter 2.17 Rice. In: Impacts of climate change on the agricultural and aquatic systems and natural resources within the CGIAR's mandate. Edited by Philip Thornton and Laura Cramer. Working Paper No. 23 of CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), pp. 122-130	

2012 Case studies

Number of case studies to be submitted is dependent on budget size so please refer to the table on the explanatory notes. Each case study should be about half a page, and Program Participants are expected to build a portfolio of case studies over the years that demonstrate all different types.

CCAFS Center Led Activities IRRI - International Rice Research Institute

CASE STUDY 1	Title change affecting land use in the Mekong Delta: Adaptation of rice-based cropping	Author R. Wassmann; R. Labios
	Type Capacity enhancement	Date (DD/MM/YYYY) 01/01/2012
	Countries Vietnam	
	Keywords e Change, Mekong Delta, adaptation, mitigation, salinity, flooding, varieties, crop n	Photo URL php?option=com_k2&view=itemlist&layout=category&task=category&id=880&Itemid=
	Introduction/Objectives (400 characters) IRRI's activities on Climate Change in the Mekong Delta are embedded in a comprehensive project on impact assessment, adaptation and mitigation (CLUES = Climate Change affecting Land Use in the Mekong Delta: Adaptation of Rice-based Cropping Systems). The Mekong Delta is Vietnam's main rice area and accounts for half of the annual rice production. The Delta's rice land use is divided into agro-hydrological zones which are characterized by distinct patterns of flood duration and depth, water availability and the salinity regimes. Over the last 30 years Vietnamese farmers have been adapting to the changing environmental conditions by modifying and diversifying their production systems and water management. But the recent and forecasted agro-hydrological changes threaten the viability of these farming and social systems and subsequently food security within South East Asia. Significant constraints which limit the ability of the farmers to adapt to the new hydrological regime	
	Description of the project, procedures etc. (1100 characters) we have selected four target areas that represent a specific agro-ecological zone of the Mekong Delta. In the context of this proposal, a target area comprises an experimental farm plus the surrounding villages which will be used for socio-economic studies as well as participatory research. The investigations in these target areas will also serve as 'entry points' to engage and build capacity with the local provincial officials and farmers for future uptake of technologies in other locations of the respective zone.	
	Project results (be concrete as possible), innovate findings, novel outcomes and short discussion on the implication of these results (1100 characters) - Established risk maps of saline intrusion and flooded area in the Mekong Delta and Bac Lieu province. - Developed land use and soil map for Bac Lieu province as a coastal area in Mekong Delta. - Assessed and analyzed climate change constraints in rice-based farming systems and the adaptive capacities of farmers in all study sites. - Conducted a demonstration of alternate wetting and drying technology in Bac Lieu province with GI7 Bac Lieu for about 100 farmers.	
	Partners involved and their role (250 characters) CLUES project is funded by ACIAR in partnership with the Australian Commonwealth Scientific and Research Organization (CSIRO), International Water Management Institute	
	Links/Sources for further information http://irri.org/index.php?option=com_k2&view=itemlist&layout=category&task=category&id=792&Itemid=100887	
CASE STUDY 2	Title Land Use and Climate Change Interactions in Central Vietnam	Author R. Wassmann, B.O. Sander
	Type Capacity enhancement	Date (DD/MM/YYYY) 01/01/2012
	Countries Vietnam	
	Keywords change, hydrology, climate scenarios, adaptation, mitigation, salinity, varieties, water	Photo URL http://www.lucci-vietnam.info/gallery/stakeholder-workshop
	Introduction/Objectives (400 characters) IRRI's Climate Change activities in Central Vietnam form part of a comprehensive regional assessment (LUCCI = Land Use and Climate Change Interactions in Central Vietnam). The study area, Vu Gia/ Thu Bon river basin, is characterized by heterogeneous topography with large portions of flood-prone areas as well as high incidences of poverty as compared to other Vietnamese regions. The LUCCI project will develop strategies for sustainable land use in Central Vietnam considering the regional socio-economic development, national planning elements as well as regional climate change projections. The research merges both, natural and social science approaches. Thematically, the project focuses on analyzing the impacts of different land use systems and crop management on GHG emissions as well as climate change impacts on existing land uses, the natural environment and the society.	
	Description of the project, procedures etc. (1100 characters) The task of IRRI in this concerted effort is to investigate the specific role of rice production as a means for mitigation as well as adaptation. In 2011, IRRI's activities have focused on creating sound logistics for the envisaged experiments. We have established a state-of-the-art laboratory for GHG analysis and lectured local staff in two training courses on the various procedures for conducting emission measurements. In 2012, we also initiated field trials on salinity screening of rice cultivars and conducted a course on Participatory Variety Selection in the salinity affected coastal area of this Delta.	
	Project results (be concrete as possible), innovate findings, novel outcomes and short discussion on the implication of these results (1100 characters) In the first two years of the project (2011/12, we were able to record complete patterns of Greenhouse Gas emission rates over three growing seasons. These records represent -- to the best of our knowledge -- the first complete data set on emissions from rice fields in Vietnam. Measurements encompassed different water regimes, namely continuous flooding and alternate-wetting-and-drying (AWD). The available data base underscores the mitigation potential of AWD. Seasonal emissions under AWD were 20-40% lower than under continuous flooding.	
	Partners involved and their role (250 characters)	

Hue University of Agriculture and Forestry, Vietnam, implements field measurements on mitigation and adaptation

Links/Sources for further information

<http://www.lucci-vietnam.info/>

2012 Outcome report

Frequency of reporting outcomes is dependent on budget size so please refer to the table on the explanatory notes. (max 1 page)

CAAFS Center Led Activities IRRI - International Rice Research Institute

OUTCOME 1

What is the outcome of the research (use of research results by non-research partners)?

Revised UNFCCC methodology for water management in rice

What outputs produced in the three preceding years resulted in that outcome?

- 1) Advising BayerCrop Science in technical matters related to the UNFCCC methodology
- 2) Field measurements conducted jointly with NARES

What partners helped in producing the outcome?

- 1) BayerCrop Science
- 2) NARES from Indonesia

Who used the output?

Potential developpers of CDM projects in rice

How was the output used?

For designing Project Development Documents (PDD) -- although we cannot quantify the number of individual efforts

What is the evidence for this outcome: Specifically, what kind of study was conducted to show the connection between the research and the outcome? Who conducted it? Please provide a reference or source.

Methodology has been approved and publisehd by UNFCCC.

Gender and Social Differentiation related activities summary report - 2012

CRPs that have presented their Gender Strategy to the Consortium in 2012 should show progress in 2013 in relation to implementing the Strategy. Therefore it is expected from Program Participants that findings of gender and social differentiation activities and their significance to be referred in this summary report. It is essential to relate progress towards outcomes to the baseline gender-differentiated conditions being used to measure change. This report should also refer specifically to what is being learnt about gender and how this knowledge is being used to inform research priority-setting and approach. If none or few of your activities integrate gender please explain why it is not relevant to your research portfolio.

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Gender issues in Philippine rice production

Following the CCAFS Gender Strategy in 2012, IRRI has come up with an assessment of gender issues in Philippine rice production. Under each resource category, a brief analysis of the gender roles, e.g. intra-household allocation of resource are made. Entry points for gender strategy are also identified.

Resource 1: Land, water and other agricultural assets

Analysis:

The cultural role of strong family ties in rural areas of the Philippines effectively defies a gender-specific allocation of assets. Land, water and other agricultural assets are considered property of the family in the first place and to lesser extent possession of an individual family member.

Entry points for gender strategy:

Land tenancy in the Philippines is typically under sharecropping and leaseholding schemes, which limit the adoption of capital-intensive technologies, e.g. improved irrigation. Thus, this category offers a very limited scope for an efficient gender strategy.

Resource 2: Labor

Analysis:

Men are generally engaged in farm production whereas women are into domestic activities. These gender-specific roles are deeply embedded in cultural values and traditional beliefs of the rural population. Despite socio-economic development, these fundamental gender roles in terms of division of labor have remained unchanged.

Entry points for gender strategy:

Given the gender-specific division of labor, adaptation and mitigation technologies in rice production fall outside the realm of women's duties. Thus, this category offers a very limited scope for an efficient gender strategy.

Resource 3: Financial services

Analysis:

Women often act as financial managers and agents for the entire family. They are expected to borrow for family needs and do bookkeeping. Wives also play a decisive role in decision making for major financial investments as well as day-to-day expenditures.

Entry points for gender strategy:

Benefits provided to women farmers pending upon implementation of adaptation and mitigation practices, namely:

- * Agricultural loans
- * Seeds and fertilizers

Resource 4: Human and social capital

Analysis:

As a prominent feature of Philippine rural society, many women have higher educational attainments than their spouses. However, in terms of knowledge on farm management, men are more proficient and skilled.

Entry points for gender strategy:

Specific awareness and training courses for women farmers on climate change and feasibility of adaptation and mitigation options.

Resource 5: Technology

Analysis:

As an implication on division of labor (see above), women do not handle farm inputs and farm machinery. They may, however, be involved in decision making related to purchase of farm inputs.

Entry points for gender strategy:

Given the involvement of women in decision making for investments, they may also influence the purchase of farm inputs and machinery required for adaptation and mitigation.