Entry No. IRRC-0471

Category	: International Rice Research Conference
Select Theme	: Climate change and environmental sustainability
Endorsement email	:
Keyword 1	: Mitigation of climate change
Keyword 2	: Climate smart agriculture
Keyword 3	: Carbon and nitrogen cycles
Title of Entry	: Multi-disciplinary Research for Greenhouse Gas Calculation of Rice Cultivation: Field Measurements and Crop management Surveys Conducted in the Mekong Delta, Vietnam
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: The objective of this study was to improve Greenhouse Gas (GHG) emission estimates for one of the most important rice-growing regions of the world, the Mekong Delta, Vietnam. At the same time, the presentation will give special emphasis on the methodologies required for different steps of GHG calculations, namely (i) field measurements of emission rates, (ii) data evaluation for determining Emission Factors for different zones and seasons, (iii) surveys on crop management, and (iv) integration of all these data sources into a GHG calculation tool. The delta consists of four zones with alluvial soils, salinity intrusion, deep flood and acid sulfate soils. These zones have very distinct bio-physical conditions and cropping cycles that affect patterns and magnitudes of methane emissions in various forms. While rice production emits methane, nitrous oxide and carbon dioxide, methane accounts for the bulk of the overall emissions and represents the focus of our assessment. Our data set on field measurements (Step 1) comprises methane emission rates from 7 sites with a total of 15 cropping seasons. These data sets have resulted in zone-specific Emission Factors (Step 2). Crop management data was obtained from farmer survey (Step 3) using a specifically developed questionnaire to avoid technical terms that may not be familiar to farmers. Emission Factors and survey data have been entered into a GHG calculation tool (Step 4). The results indicate significant differences among the zones, specifically, higher emission from deep flooded zone followed by alluvial/acid-sulfate and saline zone. The emission of the MRD accounts for approximately 13.4 million tCO2eq for methane alone which accounts for 80% of all GHG emissions. Accordingly, mitigation efforts should focus on reducing methane emissions during flooded conditions. Apart from these quantification, the findings of this study underline the need for multi-disciplinary approaches in

GHG calculations. Field measurements alone will not lead to significant improvements as long this data is not combined with targeted surveys on crop management and proper procedures for up-scaling of emission rates.

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