Entry No. IRRC-0655

Category	: International Rice Research Conference
Select Theme	: Climate change and environmental sustainability
Endorsement email	:
Keyword 1	: Adaptation to climate change
Keyword 2	: Climate smart agriculture
Keyword 3	: Multidimensional sustainability (environment, economic, social, governance)
Title of Entry	: Participatory prototype design and assessment for climate-smart rice farming: A case study in northern Vietnam
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Rice production systems are an important source of agricultural greenhouse gas (GHG) emissions. Climate-smart rice (CSR) farming techniques, such as alternate wetting and drying, have been developed but have often not taken into consideration the constraints imposed by the practices and preferences of farmers. Since GHG mitigation benefits are not obvious at smallholder farm level, it is essential to design site-specific CSR technologies with the participation of local stakeholders. The purpose of the present study was to adapt a participatory approach to designing and assessing prototypes for the dissemination of (CSR) production systems. To improve the hybridization of scientific and local knowledge, a participatory five-step approach to prototyping was applied: (i) diagnosis based on a literature review and survey of stakeholders, (ii) prototype design based on laboratory trial and local knowledge (that of farmers, agricultural advisors and regional stakeholders), (iii) prototype testing in growth chambers, (iv) prototype testing in farmers' fields and (v) prototype dissemination and assessment. The study was conducted in An Luong village, Red River Delta, northern Vietnam. In the study area, rice residue burning is restricted and farmers have to incorporate residue into the soil. Current water management practices, i.e. conventional continuous flooding and adopted midseason drainage, are not enough to reduce GHG emissions from added residues. Two new prototypes (pre-planting plus midseason drainage and early plus midseason drainage) were designed in participation with local stakeholders and subsequently tested in the laboratory and in the field with the participation of local farmers. Future CSR prototypes were assessed based on

the yield, GHG mitigation, and feedbacks of local stakeholders. Early plus midseason drainage proved to be an effective and feasible option for CSR production in the area. Here we show that participation of local stakeholders in the re-designing process help to identify the feasible CSR production options, further it facilitates smallholder rice farmers to implement CSR practices in their fields.

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