Entry No. IRRC-0106

Category	: International Rice Research Conference
Select Theme	: Sustainable and equitable farming systems
Endorsement email	:
Keyword 1	: Yield gaps
Keyword 2	: Nutrient management
Keyword 3	: Water management
Title of Entry	: Optimizing sowing dates and nutrient management to reduce yield gaps and improve nutrient use efficiency - Evidence from modeling of rice-based cropping system in Indonesia, Thailand and Vietnam.
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: The yield gap assessment framework is a robust tool to evaluate performance of farmers at different scales, and reducing the yield gap is often one of the main objectives of a research and development program to ensure food security and cropping system sustainability. In this work we quantify the contribution of the cropping calendar and nitrogen management to reduce rice yield gaps in 3 locations (Yogyakarta-Indonesia, Nakhon Sawan -Thailand, Cantho - Vietnam) using a baseline household survey as reference. The rice crop model ORYZA V3 was calibrated using on-farm field trial data to simulate farmers' practices (FP) and the best management practices recommended (BMPs) in each site. Simulations scenarios combining i) 14 day intervals of sowing dates within the sowing window of the main rice season and ii) 10 levels of total Nitrogen application rates ranging from no application to the maximum nitrogen application rate documented in the household survey were performed. By shifting the current sowing windows of FP to the optimum sowing dates, yield gain ranged from 1.7% in Cantho to 10.2% in Yogyakarta. With regards to the BMPs, farmer's nitrogen application rates can be reduced by 32% in Yogyakarta without yield reduction. In contrast, in Nakhon Sawan, nitrogen application rates can be increased by up to 40% to gain about 48% in yield increase. Simulations results confirmed that there is scope to improve the existing BMPs in the study sites; with their adoption, farmers may benefit from a yield increase as well as an increase in input efficiency, resulting in an increase in profitability. The combination of the simulations results with climatic and environmental conditions analogy can next be used to explore a scaling-out strategy to develop recommendations domains on options to reduce yield gaps and improve nitrogen use efficiency. Read Less»

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