

Category	: International Rice Research Conference
Select Theme	: Climate change and environmental sustainability
Endorsement email	:
Keyword 1	: Adaptation to climate change
Keyword 2	: Environmental sustainability
Keyword 3	:
Title of Entry	: Bio-economic evaluation of cropping systems for saline coastal Bangladesh: III Benefits of adaptation in current and future environments
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Select only one type of presentation	: 15 minute oral presentation

Abstract : Climate change and salinisation present substantial challenges to the sustainability of cropping systems in southwest coastal Bangladesh. This is the third paper in a series reporting a study to assess the impacts of climate change and salinity on the productivity and economic viability of ten current and potential rice-based cropping systems in two coastal villages in Khulna District. In this paper, possible adaptations are assessed, including novel dry-season crops, changed fertilizer use, and changed sowing dates, across five climate and three salinity scenarios. Farmers' estimated, APSIM-simulated, and extrapolated yield distributions were incorporated in budgets for the ten cropping systems, using current and projected salinity levels. Current and projected future prices and costs were used to estimate different measures of profitability. Estimated variability in yields and prices was used to generate probability distributions for these profitability measures, permitting comparison of cropping systems based on profitability and risk. Adaptation through changed fertilizer use (higher or lower, depending on the crop) was projected to give higher returns for some cropping systems. However, larger improvements were obtainable with changes in sowing dates to avoid the worst stresses imposed by climate change and salinity. The loss of production of all crops except watermelon and pumpkin due to salinity was more than offset with changed sowing dates for 2030 and 2060 conditions, irrespective of season. With such adaptations, and allowing for risk, the rice/shrimp system maintained the top ranking in terms of net income per hectare in 2030 and 2060 and the rice/sunflower system maintained the second ranking. The rice/pumpkin/rice system ranked third for 2030 and fourth in 2060 while the rice/maize system moved up to third in 2060.

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