Salinity and Food Security: The Case of Two Food Systems in South-western Bangladesh

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Bangladesh is susceptible to 'too little water' during the dry season, leading to salinity intrusion in the country's south-western region. Climate change is expected to exacerbate this situation, allowing salinity to penetrate into further inland. Some researchers opine that salinity has a negative impact on rice production but favours shrimp production. Yet it is unclear what effect this would have on food security. Thus, this research aims to assess food security and any associated vulnerability of the population, basing their livelihood on the two food systems — rice and shrimp based systems. The research explores five study areas in south-western Bangladesh, lying along a salinity gradient that depicts varying exposures to salinity intrusion: two from shrimp based, two from rice based and one from mixed food systems. Representative villages have been chosen from these five areas that have similar climatic conditions as well as similar access to road infrastructure, market and electricity networks. Households were selected using a random sampling technique from those villages, and a detailed questionnaire survey was conducted on 389 households. Data show that there is no statistically significant difference among the areas in terms of household demographics. Operational land holding and income of the households are significantly higher, as is within-area variability, in the saline shrimp areas as compared to rice and mixed farming areas. However, the average number of earning members in the households is found to be higher in the rice and mixed farming areas, suggesting the presence of greater employment opportunities in the traditional rice economy compared to the export-linked shrimp economy. The consumption of food in terms of calorie intake per person (adult-equivalent) per day appeared to be the highest in the mixed food system, followed by the highly-saline shrimp, non-saline rice, moderately-saline shrimp and slightly-saline rice areas. However, although people are having somewhat lower calorie intake in the rice areas as compared to the shrimp areas their food basket is found to be more diverse, indicating the fact that their nutrition are coming from more varied food sources. Although seasonality exists for some aspects of food security in all the five agricultural areas the patterns appear to be different. The existence of “hungry period” is longer in saline shrimp and rice areas as compared to non-saline rice and moderately saline mixed areas, with rice system appearing to be the worst victim under saline condition. In comparison with shrimp, rice and mixed areas are performing better in providing safe water for drinking and preparing food, thereby ensuring food safety to a great extent for the population. Elements of risk and uncertainty, involving economic costs due to natural catastrophes, are also found to be greatly prevalent in shrimp production, suggesting the higher susceptibility of shrimp production system to natural hazards than rice and mixed systems. The results therefore suggest that it is not mere salinity that plays a significant role in enhancing or restricting peoples’ food security rather it is the cropping pattern practised under varying extent of salinity that is vital.