

## Climate Change Adaptation Strategies for Freshwater Agriculture in the Coastal Mekong Delta: Farm-scale Opportunities and Water Management Challenges

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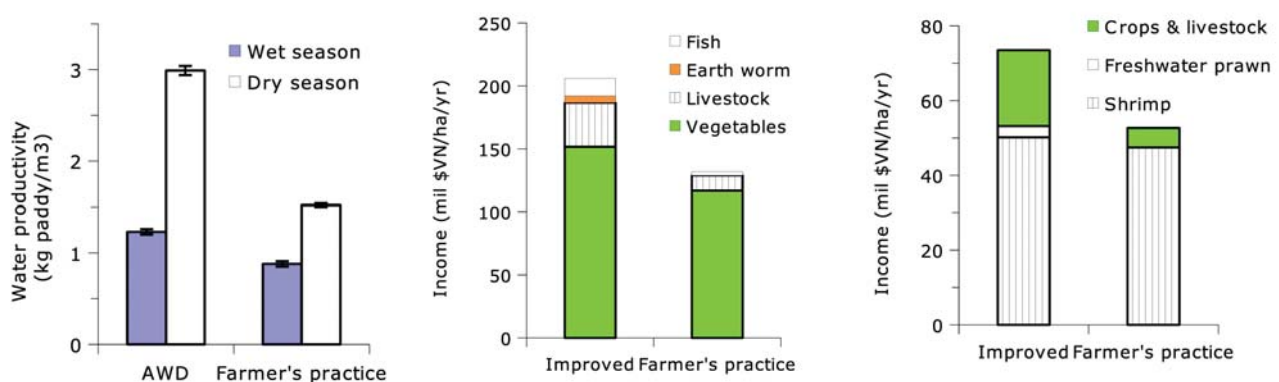
In the coastal zone of the Mekong Delta, farmers suffer heavy crop losses and fresh water shortage due to droughts and salt water intrusion in the dry season. These hazards will continue to increase in the future because of climate change.

Thus, we implemented a participatory action research in 2013-2014 in Soc Trang province. We developed adaptive farming technologies that would enable farmers to deal with climatic threats. After an impact assessment, we identified adaptive technologies that were tested on-farm, and monitored and evaluated with the active participation of local stakeholders.

For the irrigated agro-ecological zone, both the alternate wetting and drying (AWD) irrigation improved rice water productivity by 31% - 45%. The freshwater retained in communal irrigation canals significantly contributed to the irrigation requirement for rice crop from drought or salinity intrusion threats.

For the rain-fed and brackish rice-shrimp agro-ecological zones, a package of technological

measures, including pond capacity improvement, crop water-saving irrigation and farming diversification improved rain water harvest for irrigation by 63% in the dry season. Farming diversification consisted of integrating vegetables, aquaculture and livestock within the farm. Application of these adaptive technologies increased the overall farm productivity. Farm income increased from 25% to 77% (Figure 1). Local stakeholders found these technologies feasible at farm level considering their technological, socio-economical and environmental context. However, there are still barriers for scaling out the technologies. Fostering the adaptive capacity of farmers to climate change requires not only farming technologies at household level, but also changes in infrastructure (irrigation canal and field) and institutional arrangements supporting the adaptive and innovative capacity and appropriate technology transfer mechanisms like participatory extension method.



**Figure 1:** The effects (mean  $\pm$ SE) of improved practices on (a) water productivity for rice in the irrigated sub-agroecology, and farm income in (b) the rain-fed and (c) the rice-shrimp sub agroecology. AWD = alternate wetting and drying irrigation.

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