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Integrated Aqua-Agricultural Production Systems in the Brackish Water Zones of Bangladesh

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Key Message

Integrating diversified aquaculture and rice led to higher production and incomes than existing farming systems for farming households in the coastal areas of Bangladesh. The synthesis of three years surveys of existing farming systems and several on-farm trials conducted under CP10 project of CPWF in Phase 1 confirmed the finding and recommended “New Advances in Rice-aquaculture Production Systems” to improve food security and livelihoods of the people in Bangladesh in the Indo-Ganges Delta.

Summary

The CP10 Project of CPWF in Phase 1 was implemented in the Indo-Ganges Delta by Bangladesh Fisheries Research Institute in collaboration with the WorldFish Center, IRRI, and IWMI. The activities included surveys to understand the existing farming situation and characterizing the farming practices. This was followed by designing and conducting several on-farm trials in order to develop appropriate rice-aquaculture production systems to increase land and water productivity of the farm household in the areas. Different on-farm trials on integrated rice-aquaculture and shrimp were conducted at the same location in the coastal areas in sub-district (Upazila) Paikgacha in Khulna District in Bangladesh. The results showed that compared to the existing farming systems (where rice production 0-3.41 ton/ha, shrimp 73.67-268 kg/ha) the diversified aquaculture-rice production systems (Fish; Genetically

Improved Farmed Tilapia 'GIFT' strain of Nile tilapia *Oreochromis niloticus* and prawn *Macrobrachium rosenbergii*) brought production of fish (193 kg/ha), prawn (72 kg/ha), improved production of rice (4.22-4.54 kg/ha) and increased shrimp production (300 kg/ha). This integrated and diversified system of aquaculture-rice and shrimp production showed a farm net annual income of BDT 64,100/ha compared to net annual income ranging from BDT 7,900 – 49,000/ha from the existing farming systems. The increased level of production of fish and rice was largely related to the technologies, improved management of fish, prawn, rice and shrimp. If adopted, the system will be of importance to increase the resilience of farming households in the coastal areas normally subjected frequently to negative climatic events.

The lessons learned from the study are of importance to promote the systems for adoption by large numbers of farming households in all the coastal areas of Bangladesh. In addition, the outcomes of the studies will be of importance for adoption by farmers in the Indo-Ganges Basin of India.

The study was carried out as part of the regional project with lots of similar survey and on-farm trials carried out in the Mekong Delta of Vietnam. The outcomes obtained are compared and show many complementary benefits in sharing of lessons for both the river basins (the Ganges and the Mekong).