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Integrated Aqua-Agricultural production systems in the brackish water zones of Bangladesh

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Key message/highlights

Surveys of exiting farming systems and a series of on-farm trials, conducted under PN10 project of CPWF in Phase 1 revealed that improved technologies could greatly enhance the productivity, reduce crop-shrimp farming conflicts in the existing rice-shrimp system in brackish water zones of Bangladesh. Growing Genetically Improved Farmed Tilapia (GIFT), together with timely stocking of prawn in the HYV rice field increased farmers' income by 300-400% compared with the existing farming systems.

Short Abstract

On-farm surveys carried out under PN10 project showed that the agro-economic transformation in the southwest Ganges-Delta of Bangladesh was related to policy, infrastructure, water quantity and quality, and successive levels of technology interventions in farming pattern. The usual production system in the area was either monoculture of shrimp, with a yield level of 10-380 kg/ha, or alternating dry-season shrimp with wet-season rice, mainly local varieties with yields ranging from 0 to 3 t.ha⁻¹ of rice. A series of on-farm technology intervention trials were conducted on integrated HYV rice-aquaculture in the rice phase of the shrimp-rice system. HYV (BR 23, BRRIdhan 40, BRRIdhan 41) yielded 4-4.5 t.ha⁻¹. Stocking GIFT and prawn (*Macrobrachium rosenbergii*) in the rice field produced 268 kg.ha⁻¹ of GIFT and 72 kg.ha⁻¹ of prawn without compromising yield of HYV rice. Advancing the stocking of prawn post-larvae in the shrimp pond to 60 days prior to rice plantation (instead of after rice transplanting) increased a net income from BDT 11,690 ha⁻¹ for the existing system to BDT 68,337 ha⁻¹ for the integrated rice-GIFT-prawn farming. Similarly, an increased production of 538 kg ha⁻¹ of shrimp could be obtained, compared with 10-380 kg ha⁻¹ in farmers practice, by maintaining a water depth of 60-80 cm throughout the dry season shrimp farming. There have been also potentials for raising GIFT concurrently with reducing the risk of shrimp production loss due environmental stress and disease. Further efforts should be devoted to to promote the systems for wider adoption for sustainable improved livelihoods in the southwest coastal areas of Bangladesh.



Field experiment on Improved Rice-Aquaculture Integration in Coastal Rice-Shrimp System in Bangladesh, carried out under PN10 Project, of CPWF Phase 1. Different color of rice reflects different varieties tested. Rice was grown together with genetically improved farm tilapia and prawn.