

OP-12

## EXPLORING ECOLOGICAL AND SOCIETAL FUNCTIONS OF RICE-FISH FARMING IN THE AGRICULTURAL LANDSCAPE OF SRI LANKA

Kumara HKRS<sup>1</sup>, Atapaththu KSS<sup>2</sup>, Herath SS<sup>3</sup>, Vidanapathirana NP<sup>4</sup> and Marasinghe K<sup>5</sup>

<sup>1</sup> Department of Food Technology, Institute for Agro-Technology & Rural Sciences,  
University of Colombo, Sri Lanka

<sup>2</sup> Department of Limnology & Water Technology,  
Faculty of Fisheries and Marine Science & Technology, University of Ruhuna, Sri Lanka

<sup>3</sup> Department of Fisheries & Aquaculture,  
Faculty of Fisheries and Marine Sciences & Technology, University of Ruhuna, Sri Lanka

<sup>4</sup> Department of Agro-Technology, Institute for Agro-Technology & Rural Sciences,  
University of Colombo, Sri Lanka

<sup>5</sup> Department of Zoology and Environment Sciences, Faculty of Science, University of Colombo,  
Sri Lanka

rasika@uciars.cmb.ac.lk

### Abstract

Rice-fish integration is a symbiotic farming system where fish are reared in rice fields. The information on the potential effects and benefits of the system in the Sri Lankan context is largely unknown and has yet to be discovered. Therefore, this study was accomplished with target scrutiny of societal benefits and ecological function of fish farming in the rice fields of Sri Lanka. The study followed a qualitative case study approach, including literature review and document analysis. Study findings demonstrated that ecologically, the presence of fish in the system contributes to increased nutrient levels for rice plants, simultaneously serving as a natural mechanism for weed and pest control while promoting soil ecology in rice fields. The rice plants, in turn, play a pivotal role in water purification, establishing optimal water temperature conditions, and fostering heightened aquatic diversity. Regarding Sri Lanka, Tilapia and Common Carp are recognized as culturable fish species and traditional and improved rice varieties can coexist with fish under well-managed integrated conditions. Further, rice-fish farming would emerge as a powerful tool to generate long term and short-term societal wellbeing in Sri Lanka. Long-term benefits are poverty alleviation by increasing household income, promoting social upliftment, and ensuring food security through producing nutritious and healthy foods by reducing the use of pesticides. Increased rice yield, diversified farmer income, and reduced dependency on fertilizers are the short-term benefits of fish farming in rice fields. In conclusion, the integrated rice-fish farming approach demonstrates significant potential to enhance both ecological and societal well-being when compared to traditional rice monoculture practices.

**Keywords:** Rice-fish integration, Ecological benefits, societal impact