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Technology Adoption in Aquaculture in Developing Countries: Genetically Improved Tilapia in the Philippines

DIEMUTH PEMSL¹, THONGPORN TONGRUKSAWATTANA², HERMANN WAIBEL²

¹WorldFish Center, Policy, Economics, and Social Sciences, Malaysia

²Leibniz Universität Hannover, Institute of Development and Agricultural Economics, Germany

Abstract

Freshwater aquaculture is becoming more important as a source of food and income, especially for small-scale producers in developing countries. One of the most common freshwater species is tilapia (*Oreochromis niloticus*) that originates from Africa but was introduced into many Asian countries in the 1970's. Tilapia can be produced with low costs and under low input management. However, cultivated tilapia fish were commonly small and hence yields and returns are low. This was mainly attributed to poor genetic status of farmed tilapia stocks because of poor broodstock management ensuing inbreeding and introgression of undesirable genes. To increase profitability, a selective breeding effort coordinated by the WorldFish Center started in 1988 under the Genetically Improved Farmed Tilapia (GIFT) project in the Philippines. This paper analyses the response to the resulting GIFT strain (improved variety) among cage culture operator in several lakes in the Philippines. The research is an adoption study that goes beyond the conventional adopter versus non-adopter paradigm. We interviewed 300 tilapia operators in late 2006 in the provinces Laguna and Batangas. Adoption is modeled as a dynamic and recursive process where adoption, dis-adoption and re-adoption can occur in the context of a rapidly changing institutional environment including the emergence of new technology suppliers. The models facilitate the identification of impeding and stimulating factors of GIFT adoption. Results show that first time adoption and adoption intensity are driven by similar factors. These include the size of the operation, location factors, information exchange as well as experiences with alternative technology. The decision about cage area allocation to GIFT is adversely influenced by experiences with tilapia production and scale of operation. In addition, training and external source of fingerlings other than own hatchery strengthen the decision to retain the technology. The paper shows that unlike in agriculture where technology supply systems are well established, the lower level of regulation in aquaculture technology development at the national level may lead to inefficiency of technology supply and high levels of uncertainty.

Keywords: Adoption models, aquaculture, Philippines, Tilapia