

# NOTICE OF PUBLICATION

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AQUAFISH COLLABORATIVE RESEARCH SUPPORT PROGRAM

## RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

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**Title:** **Methods for Assessing Economic, Environmental and Social Impacts of Aquaculture Technologies: Adoption of Integrated Agriculture-Aquaculture in Malawi**

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**Abstract:** There is a growing demand for assessment of economic, environmental and social impacts of new food-related technologies, including the impacts of new methods for aquaculture management. This paper presents a new “minimum-data Tradeoff Analysis” (TOA-MD) model that can be applied to assess economic, environmental and social impacts in a wide array of agricultural systems that incorporate aquaculture, crops, and livestock (Antle 2011; Antle and Valdivia 2010). This model is widely applicable to assess impacts because it utilizes a generic model structure that can be parameterized with data available from a variety of sources, including farm surveys, experimental data, simulated data from biophysical simulation models, and expert judgment. A key feature of this model is that it takes into account the fact that farmers systematically selected themselves into adopting and nonadopting groups. Analysis shows that this selection must be taken into account to obtain accurate estimates of impact.

To illustrate the use of the TOA-MD model, we use it to implement an impact assessment of integrated agriculture-aquaculture (IAA) systems in southern Malawi developed by the World Fish Center, using a WorldFish farm survey data collected in 2004, together with data from other public sources. We use the TOA-MD model to demonstrate how it is possible to use available data to move a conventional economic impact assessment “along the impact assessment pathway” to estimate adoption rates in the relevant populations, and to quantify impacts on distributional outcomes such as poverty, environmental impacts such as soil and

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water quality, and social and health-related outcomes such as nutrition or gender impacts. The analysis predicts an adoption rate of about 44%. In two districts, there is a substantial increase in protein consumption associated with the adoption of IAA and substantial reductions in poverty, whereas in others the effects are smaller.

This abstract was excerpted from the original paper, which was published in *Better Science, Better Fish, Better Life: Proceedings of the Ninth International Symposium on Tilapia in Aquaculture* (2011) [Edited By: Liu Liping and Kevin Fitzsimmons] pg: 174-183

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