ENHANCING ECONOMIC AND TRADE OPPORTUNITIES IN AQUACULTURE MARKETS TO ALLEVIATE POVERTY AND INCREASE FOOD SECURITY IN AFRICA, ASIA, AND LATIN AMERICA

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Introduction

Over 92% of global aquaculture production occurs in developing countries where it not only plays an important role in food security through local consumption, but also in reducing poverty through job creation and income generation. The value of cultured food fish produced in developing countries is estimated at US$84 billion annually and, globally, aquaculture is responsible for the employment of approximately 23.4 million people. As a results, advances in the aquaculture sector that create access to resources, cooperatives/community-farms, extension pathways, and other market opportunities can have a positive impact on livelihoods in less-developed countries.

The Aquaculture & Fisheries Collaborative Research Support Program (AquaFish CRSP), managed by Oregon State University and funded by the United States Agency for International Development (USAID), strives to enrich livelihoods and promote health through international multidisciplinary partnerships that advance science, research, education, and outreach in aquatic resources. The AquaFish CRSP supports research on all aspects of aquaculture and the nexus between aquaculture and small-scale fisheries in developing countries, including issues surrounding marketing, economic risk assessment, and trade.

AquaFish CRSP researchers are studying economic aspects of aquaculture and fisheries in developing countries, including farm-level profitability, market trends, availability of financial resources, and the development of group marketing systems. Also of particular interest are the constraints across value chains in local, regional, and international markets, especially as these constraints affect competitiveness, market demand, and the availability of resources.

This poster showcases AquaFish CRSP investigations where US and host country researchers have worked together to study economic opportunities and constraints in aquaculture and fisheries to alleviate poverty and increase food security in Kenya, Uganda, Cambodia, Vietnam, the Philippines, and Guyana.


Tilapia on display and ready to grill at a restaurant in Kisumu, Kenya.


A street vendor selling tilapia on the outskirts of Lake Victoria in Kenya.


Women fish processors preparing fish for the smoker in Cambodia.


Fermented fish of various kinds provide a value added product in Cambodia.


Women at a fish buying station along the Tri An Reservoir in Vietnam

2007-2009 Investigations

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Implications of export market opportunities for tilapia farming practices in the Philippines

- Researchers identified 4 characteristics affecting export and other market opportunities: product size and volume, seasonality and market windows, product form, and product destination.
- Researchers recommended the formation of producer/marketing organizations, access to low-interest loans for small farmers, and development of storage, processing, and refrigeration infrastructure.

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Developing supply chain and group marketing systems for fish farmers in Ghana and Kenya

- The arrangement for marketing farmed fish in the two countries varies, and was found to include both short supply chains from farm gate to neighboring markets and long supply chains to distant markets.
- Researchers suggested improving volume and supply consistency and further development of existing cluster farming systems.

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Competition and impacts between use of low value/trash fish for aquaculture feed versus use for human food (Vietnam and Cambodia)

- This investigation provided better understanding of the current status and trends of supply/demand for small prolific fish species and the impacts on food security/livelihoods.
- Findings revealed snakehead culture is profitable. However it creates competition for the small sized/low value wild caught fish, which is relied upon for both aquaculture fish feed and human consumption.




Images: **Far left**: Middlemen scramble to gather the best of the catch for sale on shore or in floating markets along Tonle Sap in Cambodia. **Top right**: Floating market on Tonle Sap. **Bottom right**: Value-added tilapia for sale in a Kenyan open-air restaurant.

2009-2011 Investigations

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Value Chain Development for Tilapia And Catfish Products: Opportunities for Female Participation in Kenya

- Researchers found consumption of tilapia is dependent on the gender, marital status, age, family size, residential status, and education of consumers; the price of catfish and tilapia; and the perceived importance of product color, taste, smell, and nutritional value to consumers.
- Findings suggest that high initial costs of fish farming, including land, training, and construction are among the major constraints to increased female participation in fish production. SWOT analysis indicated a need for more information sharing, highlighting the benefits of being close to urban markets.

LEAD US INSTITUTION: AUBURN UNIVERSITY

Market assessment and profitability analysis of aquaculture enterprises in Uganda

- Findings revealed that small-scale fish farmers with the widest range of marketing opportunities were located relatively close to markets or all-season roads, could supply consistent and high quality product, and were likely within the area of operation of potential traders and intermediaries that deliver fish to markets.
- Researchers found a need for improved market access and infrastructure, development of value-added products, and enhanced regulation enforcement.

LEAD US INSTITUTION: UNIVERSITY OF ARIZONA

Expansion of Tilapia and Indigenous Fish Aquaculture in Guyana: Opportunities for Women.

- This investigation provided marketing training to Guyana farmers to improve sales of farmed fish and shrimp both domestically and international level. Markets have since been established in interior of Guyana and overseas, including retailers in the United States.

LEAD US INSTITUTION: UNIVERSITY OF CONNECTICUT

Value chain analysis of snakehead fish in the Lower Mekong Basin of Cambodia and Vietnam

- In Vietnam, ten significant market channels were identified, with the most prominent being "Fish farmers – Wholesalers – Retailers – End consumers in the Mekong Delta (MKD)"
- In Cambodia, 11 significant market channels were identified, with 25% of the wild-caught snakehead going directly from fishers to end users.
- In Vietnam, wholesalers made about 90% of the total profits, while farmers made only about 6% of the profit in the system. Retailers make the greatest profit per kg, but only account for a small percentage of total profits in the system due to the small number of kg that each retailer handles.

LEAD US INSTITUTION: NORTH CAROLINA STATE UNIVERSITY

Improving supply chain opportunities for tilapia in the Philippines.

- Researchers found that the tilapia industry supply chain in the Philippines includes hatchery and nursery farms that provide improved brood stocks to fish farms, which, in turn, provide improved quality tilapia fishes for end-users such as consumers and institutional buyers.
- Researchers offered several suggestions, including: intensify technology transfer to farmers; motivate small farmers to participate in supply chains; institutionalize an accreditation program for quality assurance of products and services; and provide capital windows to improve facilities and reduce logistics and transaction costs in the entire supply chains of tilapia.

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